

HAM RADIO OUTLET®

WORLDWIDE DISTRIBUTION

COMMUNICATIONS EQUIPMENT CATALOG

FALL/WINTER 2020

YAESU



FT-3DR

- DUAL BAND • TOUCHSCREEN
- COLOR DISPLAY • 1200/9600 APRS
- AUTO MODE SELECT • BUILT-IN GPS

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FTM-300DR

- DUAL BAND • 50 W RF POWER
- COLOR DISPLAY • BUILT-IN BLUETOOTH
- AUTO MODE SELECT • BUILT-IN GPS

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FTDX101MP

- SDR TECHNOLOGY • TOUCHSCREEN
- DUAL RECEIVERS • WATERFALL DISPLAY
- 32 BIT DSP • 200W • ACTIVE BAND MONITOR

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ALINCO

DJ-MD5TGP

RoHS

DMR DIGITAL/ANALOG DUAL BAND

VHF/UHF 5W DMR Dual Mode Tier I/ II Handheld Transceiver

Alinco's DJ-MD5TGP features 5W DMR Tier I/II Technology and is the newest addition to our DMR family of handheld dual band VHF/UHF transceivers. Part 90 certified for business and amateur communication, the DJ-MD5TGP features GPS, color display and 4000 channels of memory as well as a IP54 rated polycarbonate body. The DJ-MD5TGP utilizes DVSI's AMBE+2 vocoder technology providing the best possible audio performance at an affordable cost.

FEATURING

- DMR Tier I and Tier II
- 1.77 inch TFT color LCD
- VFO/MR Switch
- Output power selectable (5W/2.5W/1W/0.2W)
- 4000 channel memory
- GPS Built-in
- APRS Support (Digital Mode only)
- Individual/Group/All call (Digital mode)
- CTCSS/DCS/DTMF/2Tone/5Tone encode and decode (Analog mode)
- 1700mAh Li-ion battery
- FCC Part 90 Certified

SPECIFICATIONS

- Frequency Range: 136-174MHz/400-480MHz
- Channel Capacity: 4000ch
- Channel Spacing: 25KHz(Analog)/12.5KHz(Digital/Analog)
- Operating Voltage: DC7.4V
- Frequency Stability: $\pm 2.5\text{ppm}$
- Temperature range: -20~+55?(Operating)/+5~+40?(Charging)
- Dimensions(WxHxD): 59x118x40mm(with battery pack)
- Weight: 256g(with battery pack and antenna)
- Power Output: 5W/2.5W/1W/0.2W
- Modulation(Digital): 7K60FXD/7K60FXE
- Modulation(Analog): 16K0F3E/11K0F3E

*Specifications subject to change without notice



Base Transceiver



All-Mode Transceiver SSB/CW/AM/FM DX-SR8T

The DX-SR8T covers 160 m to 10 m amateur bands including 5.3 MHz in SSB, CW, AM and FM modes. Output power is 100 W SSB / CW / FM and 40 W in AM with low and super-low power settings for QRP operation. General coverage receiver of all modes 135 kHz to 30 MHz. Receiver features are similar to the DX-R8T.

EDS-17 Front panel remote kit optional. 5 m cable, front panel bracket, unit cover and hardware.

Handheld Receiver

Wide Band Receiver

DJ-X11T

Get the power of a desktop receiver in a handheld! Features: Two (2) VFO simultaneous receive; covers 0.05 to 1299.995 MHz* in all modes; 1200 memories; sub-band coverage VHF 118-171 MHz and 336 to 470 MHz in AM / NFM; IQ signal can be used with 3rd party software and discriminator output; easy-to-use twin dials; selectable tuning steps; 3 selectable scan speeds; freeware to operate as a software defined radio.

*Cell band blocked.



Desktop Receiver



All-Mode Receiver Analog / Digital Hybrid DX-R8T

Monitor SWL signals from aviation, navigation and data sources.

- IQ signal output allows use of third-party SDR software.
- Front and rear jacks.
- Direct frequency input to the dual VFO.
- Detachable front control panel mounting options.
- Large LCD display.
- Front speaker and 2 W audio output.
- Rugged die-cast chassis.
- Narrow ceramic filters (AM 2.4 kHz, SSB 1 kHz) and 0.5 kHz audio filtering for CW.
- 4-level RF amp / attenuator.
- IF shift and RIT. RIT range: ± 1.2 kHz.
- Noise blower.
- 3 banks / 600 memory channels.
- Two sets of programmed search pairs and varieties of scanning modes.
- Auto power off, sleep timer, dial and key locks, RX indicator illumination.
- Computer utility software to manage settings and edit memories.
- Receive circuitry: Double conversion superheterodyne.
- Receiver current drain: 1.0 A.
- Spurious and image rejection ratio: more than 70 dB.
- Antenna impedance: 50 ohm unbalanced.
- Frequency stability: ± 1 ppm.
- Power required: 13.8 VDC $\pm 15\%$.

*FREE 1-2 DAY SHIPPING ON ORDERS OVER \$100

*Lower 48 states. Overweight/bulky items excluded.

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MOBILE RADIOS



Dual Band

2 m/70 cm Dual Band Remote Head Unit DR-735T



- 144 MHz / 440 MHz FM transceiver.
- TX 144-148 MHz / 430-450 MHz.
- RX 108-174 MHz (AM/FM) 400-480 MHz (FM).
- Receiver double conversion.
- Civil aviation and utility receive.
- 1000 channel programmable memory.
- Full duplex / X-band repeat.
- 50 / 20 / 5 W power output on both bands.
- Huge alphanumeric LCD display.
- RGB backlight with choice of eight colors.
- Set different display color for different functions and store in memory.
- Independent 2 meter / 70 cm dials / volume / squelch knobs.
- Removable front control head. Mount remotely or inverted for optimal speaker placement.
- Wide variety of scanning features.
- Computer programmable. Software available on line.



EXTENDED
WARRANTY
INFORMATION
ON PAGE 54!

Mobile Specifications

Model	Frequency Range	Power In	Current Drain TX	Current Drain RX	Power Out	Memory Channels	Sensitivity	Height Inches	Width Inches	Depth Inches	Weight Pounds
DR-135TMKIII*	144-148Mhz	13.8 VDC	11 A	400 mA	5/10/50 W	100	< .16uv	1.57	5.58	6.83	2.2
DR-235TMKIII*	222-225Mhz	13.8 VDC	8 A	400 mA	5/10/25 W	100	< .16uv	1.57	5.58	6.83	2.2
DR-435TMKIII*	430-450Mhz	13.8 VDC	10 A	400 mA	5/10/35 W	100	< .16uv	1.57	5.58	6.83	2.2
DR-06TA	50-53.995Mhz	13.8 VDC	11 A	600 mA	50 W	100	< .25uv	1.57	5.58	6.83	2.2
DR-735T	2M/70CM	13.8 VDC	12 A		5/20/50 W	1000		2.3	5.6	7.4	2.6
DR-B185TH	2M	13.8 VDC	6 A/20 A	500 mA	5/65-85 W	100	< .25uv	1.7	6.44	7.21	3.3

*TCXO with $\pm 2.5\text{ppm}$ frequency stability

Single Band



- Scanning functions include DCS / CTCSS / priority / group and timer / busy modes.
- TX 144-147.995 MHz
- RX 136-173.995 MHz
- Wide and narrow FM modes.
- 39 tone CTCSS / DCS / 2-tone enc/dec
- High / low power setting.
- Offset direction and frequency variable.
- Keypad lockout / reverse function.
- Alphanumeric tag / display dimmer.
- Automatic illumination brightness.
- Time out timer.
- BCLO and auto power off.
- Tone-burst tones / auto-dialer.
- DTMF TX speed, pause and monitoring features.
- Multifunctional microphone with keypads.
- S-METER squelch.
- Cable cloning.



DR-135TMKIII - 144 MHz DR-235TMKIII - 220 MHz DR-435TMKIII - 440 MHz

Features a unique multifunction backlit microphone with direct frequency input. The 144 MHz, 220 MHz, and 440 MHz models accept optional EJ-41U internal TNC or EJ-47U digital voice module. The MKIII TCXO supports a specification of ± 2.5 ppm frequency stability.



6 Meters & 50 watts DR-06TA

Catch the exciting world of the 6m band with the DR-06TA. Covering 50-53.995 MHz with an output of 50 W, it has convenient scan features, a variety of selective calling tones, theft alarm, ignition key on/off, direct frequency input, and controls from the EMS57 key pad microphone.



2 Meters & 50 watts DR-135TMKIII

2 meter FM and Airband receive (AM). Ignition key power control, theft alarm, 7 place alpha-numeric display, front panel data input, optional internal packet module to use with APRS®, rear panel serial port connection, 100 memories, 10 autodial memories.

Dual Band

Dual Band
2m / 70 cm
DJ-VX50T

The DJ-VX50T has a compact IP67 dust/water proof body. CTCSS, DTMF, DCS are standard, along with a variety of tone bursts for repeater access or selective calling. Convenience features include direct frequency input, alphanumeric channel labels and 200 memory channels that can each store operating parameters. In addition, DJ-VX50T sports VHF AM aircraft, FM broadcast and NOAA Weather Channel receiver. A Li-on battery pack and a stand charger are included.



Tri-Band

2 m / 70 cm / 1.2 GHz
DJ-G7T

The DJ-G7T tunes 0.531-1300 MHz* continuously. Full duplex receive with 144 / 430 / 1200 MHz bands. AM and WFM modes allow you to hear aviation and broadcast bands. Scan modes and options include 50 pairs of programmable scan memories. Timing adjustable priority scanning and Alinco's

Channel-Scope – visualize the presence of radio signals on the display. Output power up to 5 watts on 2 meters.

*Cell band blocked.

Handheld Specifications

Model	Frequency Range	Power In	Current Drain TX	Current Drain RX	Power Out*	Memory Channels	Sensitivity	Height Inches	Width Inches	Depth Inches	Weight Pounds
DJ-VX50T	2M/70CM	7.4 VDC	1.5 A	80 mA	5 W/4 W	200	< .12uv	4.65	2.32	1.5	.5
DJ-A11T	2M	7.4 VDC	1.4 A	300 mA	.5/2/5 W	128	< .25uv	3.9	2.32	1.4	.5
DJ-G7T	2M/70CM/1.2Ghz	7.VDC	1.6 A	200 mA	5 W†	1000	< .15uv	4.53	2.36	1.18	.6

*Power output is determined by choice of battery pack. †At 13.8VDC

DAVIS

Weather Stations

Vantage Vue®

HRO Price: \$389.95

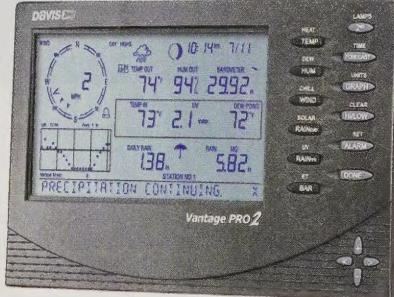
This wireless weather station provides accurate, reliable weather monitoring in a self-contained, easy-to-install system. Includes outdoor sensor array and LCD console.

- Vantage Vue radio-compatible with our flagship Vantage Pro2 professional stations so you can mix-and-match most components.
- Station includes temperature, wind, humidity, and rain sensors, console, and mounting hardware (mounting pole sold separately).
- Console shows: time and date, moon phase, forecast icons, temperature, humidity, barometric trends, heat index, and wind chill.
- Rain totals and rain rate are updated every 20 seconds for the last 25 hours, days, months.
- Domed buttons are easy to sense and press. They glow-in-the-dark.
- Set 22 simultaneous, different alarms to warn of high winds, freezing temperatures, rain rate, flood warning, and more.
- Track daily highs and lows, temperature and barometric changes by the hour.
- Graph the last 25 hours, days or months. View up to 50 graphs including temperature, rain, rain rate, wind and barometric pressure all on the console.
- Windspeed updates every 2.5 seconds. Displays in miles per hour, meters per second, kilometers per hour and knots. Measures wind direction in compass points or degrees.
- Frequency-hopping spread spectrum radio ensures consistent transmission up to 1,000 ft. (300 m) from integrated sensor suite to console.



Vantage Pro2™

HRO Price: \$509.95



The Vantage Pro2™ weather station has a versatile sensor suite that combines our rain collector, temperature and humidity sensors, and anemometer into one package. Customize by adding consoles or special purpose options. Available in both wireless and cabled versions.

This is the first and only weather station in its class to use frequency hopping spread spectrum radio technology to transmit weather data wirelessly up to 1,000 ft (300 m) outdoors, line of sight. Typical range through walls under most conditions is 200 to 400 feet (60m to 120 m). Add wireless repeaters for distances up to 1.7 miles (2.7 km).

- Large, backlit 3.5" x 6" (9 x 15 cm) LCD screen.
- Updates every 2.5 seconds.
- Options are available for UV/solar, soil moisture, short and long-range repeaters, and much more.
- Optional WeatherLink data logger and software offer additional analyses.
- Electronic components are housed in a weather-resistant shelter.
- Power the console with the included power adapter or with three C batteries (not included).

Comes with basic mounting hardware.

Optional #07717 Mounting Pole.

Optional #07716 Mounting Tripod.



ratio. The ultra-low noise master clock oscillator yields superior TX and RX performance including an incredible 110 dB of RMDR (reciprocal mixing dynamic range) at 2 kHz frequency separation!

Independent dual receivers allow simultaneous reception of two bands and two modes. Independent RF/AF gain controls are provided, and the optional RC-28 USB remote encoder knob can provide a second tuning dial for greater operating flexibility (optional RS-BA1 remote control software is NOT required).

High performance features include 100 watts of power on 160-6 meters on SSB / CW / FM / RTTY / PSK, built-in high-speed automatic antenna tuner, and digital IF filtering with digital twin passband tuning for outstanding interference rejection.

- Receives 0.30 – 60 MHz.
- DIGI-SEL digital receiver preselector provides tight RF filtering for both main and sub receiver front ends.
- Dual high-speed, high-resolution, real-time spectrum scopes and waterfall displays.
- High-resolution 7" touch-screen color display for quick, intuitive operation and effortless control of functions.
- Ethernet port for IP remote operation (optional RS-BA1 software required).
- Compatible with SM-50 dynamic mic and AH-4 remote automatic antenna tuner options.
- Superior sound quality speaker.
- SD card saves settings and recorded communications. (Card not included).
- External monitor via a DVI-D port.



very weak signals and very strong signals to be heard without distortion or ear fatigue.

- 7" wide color TFT LCD. Spectrum waterfall display operated by PC mouse.
- Audio scope function.
- Waveform outline in real-time spectrum scope (ON/OFF).
- Remote control ops for RS-BA1.
- TX delay sets the timing to control an attached external linear amp.
- Added RIT and dTX commands for CI-V remote control.
- Internal distortion reduction.
- Icom's DIGI-SEL.
- Less internal phase noise.
- Multiple AGC loops; full control.
- 200 W power out at full duty cycle.

Dual VFO Software Defined Radio IC-7610

The IC-7610 uses an innovative RF direct sampling system to convert a received analog signal to digital. Then it applies sophisticated processing to produce extraordinarily clear audio with high signal-to-noise

HF/6M Transceivers



The Software Defined Radio Everybody Wants! IC-7300

This HF transceiver has innovative features like the RF direct sampling used in many software defined radios. The real-time spectrum scope with waterfall function gives top-level performance in resolution, sweep speed, and dynamic range.

- SSB, CW, RTTY, AM and FM modes.
- Transmits on amateur HF + 6m frequencies.
- Use the TFT LCD as a touch screen to set various functions and edit memory contents.
- 100 W output HF / 50 MHz bands.
- Built-in high-speed automatic tuner.
- Multi-dial knob for smooth operation. Push to see menu items. Select with a touch of the screen and adjust levels by turning the multi-dial knob.
- Phase noise characteristics are improved about 15 dB (at 1 kHz frequency offset) when compared to other transceivers.
- 101 memory channels: 99 regular and 2 scan edge channels.
- Remote control operation for RS-BA1.
- Memory keyer functions for CW and RTTY.
- USB for CI-V and audio input / output.
- Voice memory function.
- RTTY decode log function.
- Screen capture & SD card slot.
- Large cooling fan system.
- Multi-function meter.
- Multiple CW functions & digital noise reduction.



Speaker SP-41

Designed to match the IC-7610. Two input lines. Has tone switches, input jack selector switch, 1/4" head-phone jack and On/Off Switch. Rated 7 W @ 8 ohms.



Speaker SP-38

Get great sound with this high quality speaker, perfect for the IC-7300. Rated 5 W @ 8 ohms

Contestor's Rig IC-7700

The Contestor's rig has two 32-bit floating point DSP units. One for the transmitter / receiver and the other for the spectrum scope. There is a +40 dBm 3rd order intercept point and ultra wide dynamic range. Two IF stages and Icom's image rejection technology that allows for

- Weighted VFO Knob.
- Digital IF filters, twin passband tuning, three roofing filters, digital manual notch filter.
- Adjustable noise blanker.
- Ultra high stability OCXO unit.
- CW / RTTY / PSK31 operation.
- 50 MHz band preamp & mixer.
- Microphone equalizer.
- RF speech compressor.
- Digital voice recorder.
- Increase APF volume level.
- CF memory card.
- 4 antenna connectors.
- Double conversion super-heterodyne.



All-Band HF | IC-718

- Compact Design.
- RX .03~29.995 MHz.
- 101 mem channels.
- Modes: USB, LSB, CW, RTTY, & AM.
- IF shift interference rejection.
- Output power: SSB / CW / RTTY 5W~100W variable, AM: 2~40W variable.
- Transmits amateur HF except 60m.
- AF DSP built-in.
- Built-in keyer.
- VOX operation, mic compressor, RF gain control.
- 10-key pad for direct frequency entering and memory selection.

HF/6M Transceiver



High Performance HF| IC-7851

The IC-7851 perfects HF and 6m operation with features such as a 1.2kHz optimized roofing filter to improve in-band adjacent signal performance. This design outperforms competitors' similar models in the 2 kHz to 10 kHz separation tests.

Unlike HF rigs with a conventional voltage controlled oscillator for the 1st LO, the IC-7851 uses a direct digital synthesizer (DDS) with a voltage controlled SAW oscillator (VCSO). This new 1st LO design sets a benchmark for phase noise with -150 dBc / Hz at 10 kHz offset (and -140 dBc /

Hz at 1 kHz offset). The IC-7851 also has the spectrum waterfall function found in the IC-7700. The high-resolution waterfall screen shows the changing amplitude of frequencies over time. An enhanced spectrum scope promotes fast and accurate scan and can be operated with PC mouse via USB port.

The dual scope function shows simultaneous activity in both bands to help search a sub-band while maintaining a run frequency on the main band.

RemoteTuner

Automatic Antenna Tuner AH-4



The AH-4 auto-tuner covers all amateur bands from 80 to 6 meters when used with a minimum 23' long wire antenna. With the optional AH-2b antenna element, tune 40m through 6m for mobile operation. It has automatic band changes and tunes usually in less than 2.5 seconds. The 45 memories store SWR minimum and tuning combinations. Requires only 300 mW to tune and handles up to 120 watts. HRO Price: \$279.95

Dust Covers

Prism Embroidery DUST COVERS



Custom designed and elegantly manufactured dust covers for a variety of Icom HF radios and amplifiers. Crafted out of leatherette that is cut to the designated size via templates that are designed using the manufacturer's specifications. Includes a soft felt lining. The perfect way to protect your investment when not operating. Contact HRO for more info.

Microphones



Desk Mic IC-SM30

This goose-neck style desktop microphone features an 8-pin metal connector, PTT / PTT lock switches and low-cut filter. It also has an adjustable microphone output level and the voice characteristics have been especially designed for SSB and FM. IC-OPC589 required for use with radios with modular jack [IC-703, IC-706series, IC-7000, IC-7100].



Desk Mic IC-SM50

This unidirectional, dynamic microphone is designed for select Icom base station transceivers. (It cannot be used with non-Icom transceivers since the power is supplied from the connected transceiver). The SM-50 features Up-Down tuning (on compatible Icom transceivers). There is a switch for PTT and also a lock feature. A low cut switch on the top of the base cuts out the low frequency components on input voice signals. IC-OPC589 required for use with radios with modular jack such as the IC-703, IC-706 series, IC-7000, & IC-7100.

Software



IP Remote Control RS-BA1

Remotely control your Icom transceivers via an IP network with the RS-BA1. It allows you to install the radio in another room using your home network or a remote location over the Internet. The low voice latency caused by the RS-BA1 provides the same operational experience as using an actual radio. Most functions and modes of your transceiver can be controlled.

The RS-BA1 has two component applications: System configuration to set up the IP address and other settings, and Remote Control allows you to control the radio. The display on the RS-BA1 is similar to the radio's front panel. Supports the IC-7100, 7200, 7410, 7300, 7600, 7610, or 9100 with USB connection to a PC. Also the IC-7800 or 7700 connected to a PC with an RS-232C cable plus S/P DIF or ACC cable.



Remote USB Encoder IC-RC-28

The optional RC-28 utilizes the same tuning knob and encoder used on Icom HF radios, providing a tactile option for the RS-BA1 software. The IC-RC-28 is not a standalone control for Icom radios and may only be used with the RS-BA1 software.

Model	Receive Freq Range	Power	TX Amp	AM	FM	SSB	CW	FSK	Mike Z	Sensitivity 1.8-30 MHz	Notch	Audio
IC-705	Medium wave to 70cm	13.8 VDC		.5-10 W	.5-10 W	.5-10 W	.5-10 W		600			
IC-718	0.03-29.995 MHz	13.8 VDC	20A	2-40 W		5-100 W	5-100 W	5-100 W	600	< .16 dBu at 10 dB		> 2.0 W
IC-7100	30 kHz-199.9999 MHz 400-470 MHz	13.8 VDC	22A	1-40 W	**	**	**	**	600	< .18 dBu at 10 dB	Man + auto	> 2.0 W
IC-7300	30 kHz-60 mHz	13.8 VDC	21A	1-25 W	100 W	100 W	100 W	100 W	600	< .16 dBu at 10 dB	Man + auto	> 2.0 W
IC-7610	30 kHz-60 mHz	13.8 VDC	23A	1-25 W	1-100 W	1-100 W	1-100 W	1-100 W	600	< .15 dBu at 10 dB	Man + auto	> 2.0 W
IC-7700	30 kHz-60 mHz	85-265 VAC	5.6A	50W†	200 W†	200 W†	200 W†	200 W†	600	< .16 dBu at 10 dB	Man + auto	> 2.6 W
IC-7851	30 kHz-60 mHz	85-265 VAC	5.6A	50W†	200 W†	200 W†	200 W†	200 W†	600	< .16 dBu at 10 dB	Man + auto	> 2.0 W

† Output is continuously adjustable from 5 to full power. * 50 W on 2 meters, 20 W 70cm. ** 2-100 W HF / 50 MHz, 2-50 W VHF, 2-35 W UHF.

MOBILES/HANDHELDS



Dual Band

Practical Dual Bander

IC-2730A

With Optional
Bluetooth
Headset



This high performance mobile radio is a classic 2m/70cm performer.

- Wideband receiver 118-174 / 375-550 MHz.
- Large backlit LCD screen.
- V/V & U/U simultaneous receive.
- Hands-free capable with optional UT-133.
- Optional VS-3 Bluetooth® headset.
- Cross band repeater capability.
- CS-2730 free downloadable PC programming software.
- 50 watts output on VHF and UHF.
- Squelch delay and squelch attenuator.
- Built-in 50 CTCSS and 104 DTCS tones with split tone function.
- Controller attachment to the main unit with optional MBA-4.
- 1052 memory channels including 50 scan edges and 2 call.
- Weather channel receive with weather alert (USA version only).
- HM-207 remote control mic is standard.
- 16 DTMF autodial memories.
- CI-V remote control capability (through the optional OPC-478UC).

Handheld Batteries & Chargers

Model	Volts DC	Rating mAh	Trickle Charger	Rapid Charger
BP-210N	7.2	1650	BC-146-01#	BC-144N-51
BP-264	7.2	1400	BC-192-12#	BC-191-12**
BP-265	7.4	1150		BC-193**
BP-271	7.4	1150	BC-167SA	BC-202**
BP-272	7.4	1880	BC-167SA	BC-202
BP-287	7.2	2800	BC-123S	BC-223
BP-298	7.4	2250		BC-240+
BP-299	7.4	3150		BC-240+

*Requires BC-123s **220 Version available. *Needs BC-242

Single Band

2 m Mobile Solution

IC-2300H

The IC-2300 2m mobile transceiver boasts a powerful 65 W output, simple to use user interface, and built-in CTCSS.

- Simple operation with a large tuning dial.
- 207 alphanumeric memories.
- Dynamic memory scan allows scanning of selected memory banks.
- Pocket beep function for incoming calls.
- DTMF autodial.
- Select yellow, green or amber display.
- PC to XCVR and XCVR to XCVR cloning (optional software and cable required).
- Automatic repeater function and weather channel (USA only).
- Power supply voltage display, time-out timer, repeater lock out, auto power off.
- Selectable squelch delay and squelch attenuator.
- Wide / narrow channel setting.
- Passed MIL-STD 810G specifications.



Icom Handheld Accessories

		52A	V86	HRO Price
Battery Packs	BP-264		•	\$39.95
	BP-298		•	\$59.95
	BP-271	•		\$74.95
	BP-272	•		\$99.95
Battery Cases	BP-263		•	\$26.95
	BP-273	•		\$49.95
Carrying Cases	LC-178	31A		\$28.95
	LC-179	51A		\$34.95
	SJ-1	51A		\$34.95
Cables	CP-12L	•		\$34.95
	CP-23L		•	\$35.95
	OPC-254L	•		\$16.95
	OPC-478		•	\$39.95
	OPC-478UC		•	\$60.95
	OPC-515L		•	\$22.95
	OPC-2004L		•	\$29.95
	OPC-2144	•		\$29.95
Speaker Mics	HM-75LS	•		\$74.95
	HM-158LA		•	\$44.95
	HM-159LA		•	\$69.95
	HM-166LS	•		\$79.95
	HM-186LS	•	•	\$52.95
Headsets	HS-94	•	•	\$22.95
	HS-95	•	•	\$144.95
	HS-97	•	•	\$35.95
Other	SP-27		•	\$35.95
	AD-92SMA	•	•	\$18.95
	MB-124		•	\$10.95

*Cable only to be used with HS-94, 95, or 97.

AA Alkaline Battery Packs

BP-208N
BP-263
BP-273
BP-293

Use standard "AA" batteries to power your handheld. Great for emergency use or as a quick, backup battery.

Icom Handhelds

Model	Frequency Range	Power In	Current Drain TX	Current Drain RX	Power Out (Std Battery Pack)	Sensitivity	Height Inches	Width Inches	Depth Inches	Weight Oz
IC-V86	2M	7.5 W	1.6 A	450 mA	7.0 W	< .18uv	4.4	2.3	1.2	10
ID-52A	2M / 70CM	7.4 W	2.5 A	450 mA	5.0/2.5/1.0/0.5 W	< .18uv	4.1	2.28	1.0	9.0

Single Band



2 m Analog Radio IC-V86

Class leading 7 watt output power and new antenna design increase efficiency and communication overall coverage.

- Solid structure meets IP54 and MIL-STD 810G standards.
- Built-in CTCSS and DTCS enc/dec features.

- Frequency coverage TX / RX guaranteed useable range USA: 144–148 MHz, EXP: 136–174 MHz.
- 1500 mW powerful and crystal clear audio provides clear communication even in noisy environments.
- Supplied BP-298, 2250 mAh (typical) large capacity Li-ion battery pack.
- Optional BP-299, 3150 mAh (typical) extra large capacity Li-ion battery pack.
- Supplied BC-240, battery charger with the charging control function which reduces degradation of battery.

Handheld Receiver



Wideband RX IC-R30

The latest edition to the Icom receiver line has great new features such as: Dual receive on different bands and different modes. Dual band recording to individually record the audio of the two bands received. Wideband coverage: 01 to 3304.99 MHz. Demodulates conventional analog signals such as AM, FM, WFM, USB, LSB and CW as well as digital modes.

- Integrated GPS receiver.
- Record and playback from optional microSD card.
- Wireless listening with optional VS-3 bluetooth headset.
- Built-in USB port for charging and data transfer and CI-V control.
- Digital decode of various digital protocol signals, including P25 (Phase 1), NXDN™, dPMR™, D-STAR® and Japanese domestic DCR (Digital Convenience Radio).

Desktop Receiver



Wideband Receiver IC-R8600

- Ultra-wide frequency coverage (10 kHz–3 GHz) with RSSI (received signal strength indication) function.
- Fast moving, real-time spectrum scope and waterfall.
- Decodes multiple digital protocols, including D-STAR®, NXDN™, dPMR™ and APCO P25.
- Large 4.3 inch TFT color touch screen display.
- Clear audio quality using FPGA / DSP base architecture with superheterodyne circuitry.
- Optional IC-CSR8600 PC remote control software allows control of all receiver functions.
- I/Q signal output for use with third-party SDR software and/or external decoding.
- SD card slot for logs and voice recording.

Desktop Receiver



Professional Communications Receiver IC-R9500

- +40 dBm IP3 / 109 dB wide dynamic range.
- Measuring class accuracy.
- Superior BPF unit and dual IF filter.
- Dual DSP and 10 VFOs.
- 7" wide color TFT LCD.
- High resolution spectrum scope.
- 1000 memories.
- 2 channel noise blinder.
- 5 roofing filters & 2 point manual notch filter.
- 0.005–3335 MHz. Cellular blocked.
- All bands: SSB, CW, FSK, AM.
- Some Frequencies: FM, WFM.
- Digital voice recorder.
- 4 antenna connectors.



EXTENDED WARRANTY INFORMATION ON PAGE 54!

Handheld Receiver



Portable IC-R6 SPORT

The IC-R6 is a signal search machine, covering 100 kHz to 1309.995 MHz (cellular blocked and receives analog TV only), it can search 100 channels a second. The receiver is energy-efficient and designed to provide up to 15 hours of listening on a single charge.

With 1300 alphanumeric memory channels, 50 scan edges, and 200 auto-write memories, there are many scanning opportunities. The bank link feature allows connecting any of the 22 memory banks. The Voice Squelch Control opens the squelch only when a modulated signal is detected.

IC-R6 Accessories

Model	Description	Price
OPC-478	Cloning Cable RS-232C	\$39.95
OPC-478UC	USB PC to Radio Cable	\$60.95
SP-27	Tube Earphone	\$35.95
AD-92SMA	BNC Antenna Adaptor	\$18.95
FA-S270C	Stock Antenna	\$33.95

Call To Order
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Milwaukee, WI | (800) 558-0411

New Castle, DE | (800) 644-4476

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Phoenix, AZ | (800) 559-7388

Plano, TX | (877) 455-8750

Portland, OR | (800) 765-4267

Salem, NH | (800) 444-0047

San Diego, CA | (877) 520-9623

Woodbridge, VA | (800) 444-4799

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www.hamradio.com

D-STAR CENTRAL



Multi-Band



**HF/VHF/UHF
+ D-STAR®
IC-7100**

- Intuitive touch screen interface.
- Easy-to-see, easy-to-use slant top controller.
- Built-in high efficiency oval speaker on the controller.
- D-STAR® DV mode digital voice and low speed data communications.
- 505 memory channels.
- SWR graphic display.
- Optional MBF-1 mounting base.
- Built-in SD card slot for voice storage and data cloning.
- Built-in RTTY functions.

- Easy vehicle mounting with the optional MBF-1 kit.
- IF DSP controlled digital features. The 32-bit floating point DSP supports many digital processing features such as digital IF filter, twin PBT and manual notch filters.
- Remote Control Software (optional RS-BA1 IP).
- CW full break-in.
- CW auto tuning.
- USB Audio/Control.
- IF-DSP.

Tri-Band



**VHF/UHF/SHF D-STAR® Transceiver
IC-9700**

Designed for the VHF / UHF weak signal operator, the IC-9700 is an RF direct sampling receiver for 2 m and 70 cm, with a single down conversion for 23 cm with an IF sampled receiver between 311 – 371 MHz. This design provides a quiet receiver with the power of Icom's DSP technology along with a robust PA providing 100 W on 2 m, 75 W on 70 cm, and 10 W on 23 cm.

- All mode, tri-band transceiver covers 144, 430 / 440 and 1200 MHz.
- Supports CW / AM / SSB / FM / RTTY and D-STAR® DV and DD modes.
- Digital Data (DD) mode provides 128 kbps data communication.
- PA has a powerful 100 W (144

- MHz), 75W (430 / 440 MHz) and 10W (1200 MHz) output.
- 4.3" touch screen color TFT LCD.
- Smooth satellite operation with normal / reverse tracking and 99 satellite channels.
- Real-time, high-speed spectrum scope and waterfall display.

Dual Band

**Dual Band
D-STAR® & GPS
Mobile
ID-4100A**



Since the introduction of D-STAR® in 2001, Icom has been committed to improving and advancing the D-STAR® experience. The ID-4100A and its advance technology does just that! The upgraded user interface and new enhancements provide a product other digital voice modes cannot match!

- Full dot-matrix display with easy-to-read characters and icons.
- Compact, detachable controller for flexible installation.
- Bluetooth capable for hands-free operation. (Optional Bluetooth unit and headset required.)
- Integrated GPS and microSD card slot. (MicroSD card required.)
- Enhanced remote control apps for smart devices. (Optional Bluetooth unit and free downloadable application required.)
- iOS app.
- Terminal/access point mode.

Dual Band

**Dual Band
D-STAR® & GPS Mobile
ID-5100A DELUXE**



Designed from user input, the ID-5100A offers an intuitive user interface experience with an industry leading touch screen display. Additionally, the ID-5100A interfaces with Android™ devices and Bluetooth® headsets via the optional Bluetooth® module. The ID-5100A is one of the most advanced dualband mobiles on the market today!

- Wideband receive (118-137 MHz (AM), 137-174 / 375-550 MHz only).
- Antenna RX diversity (second antenna connector).
- DTMF decode / DV / FM repeater list.
- Optional UT-133 Bluetooth unit enables audio accessory connection and Android terminal connection (CI-V via Bluetooth SPP profile).
- Optional VS-3 Bluetooth pendant earpiece mic.
- 1,000 memory channels.
- Built-in GPS engine.
- Includes MBA-2 remote head bracket.
- RS-MS1A Android application (free-to-use download).
- Independent VHF and UHF band units (VV / UU capable) for 50 W output.
- D-Plus reflector usability.
- DV dual watch for simultaneously waiting in two DV voice streams (decodes one only).
- HM-207 control microphone is supplied as standard.

Ultra-Portable QRP



1-30/ 50/ 144/ 430 MHz All-Mode QRP Transceiver IC-705

The new IC-705 puts the power of a "Base Station" in the palm of your hand. And because of its ultra-portable size you can literally take this small wonder just about anywhere. Perfectly suited for backyards, parks, mobile, and mountain tops.

RF Direct Sampling

The IC-705 converts RF signals directly to digital data. A FPGA (Field Programmable Gate Array) processes the digital data into audio. The result is a reduction of internal noise that can hide weak signals. You will hear those distant signals that other radios mask.

Real Time Spectrum Scope And Waterfall Display

Easily see band activity, find a clear frequency, monitor receive and transmit conditions in real time. No more need for expensive add-on options.

Multiple Power Options

Included is a high capacity Li-ion battery, the same used in the ID-51A and ID-31A. For extended operation you can supply your own power from any 13.8V DC external source.

- 10 W output (13.8 VDC) and 5 W with BP-272 battery.
- D-STAR®, SSB, CW, AM, FM modes.
- Receives continuously from medium wave broadcast band to 144MHz.
- RF Direct Sampling System with real-time spectrum scope and waterfall display.
- Includes BP-272 battery.
- A whip antenna for VHF/UHF and speaker-microphone come standard. The speaker-microphone HM-243 is equipped with programmable buttons assignable to various functions, such as frequency adjustment and volume control. GPS antenna is built-in.

HF/50/144/440 MHz Multimode

Don't be limited to a few bands. Enjoy the freedom of operation from HF to UHF and in FM, AM, SSB, RTTY, and D-STAR DV. You'll also get FM broadcast and Airband reception.

Large, Color Touchscreen

At 4.3" the color TFT touch LCD allows you to clearly see and operate with ease. You can navigate through menus and adjust operating parameters with a simple touch of your finger. And the bright display means no worries when operating outdoors.

Compact and Lightweight

Even with all the impressive features this radio is a rugged, compact, and lightweight unit. At only 2.5 lb you will quickly discover that taking this radio with you is easier than ever!

- Bluetooth and wireless LAN built-in for smart phone linking and remote control and for use with Bluetooth headsets.
- MicroSD card slot for firmware updates programming, voice recording, and saving GPS log data.

Field Ops Backpack LC-192



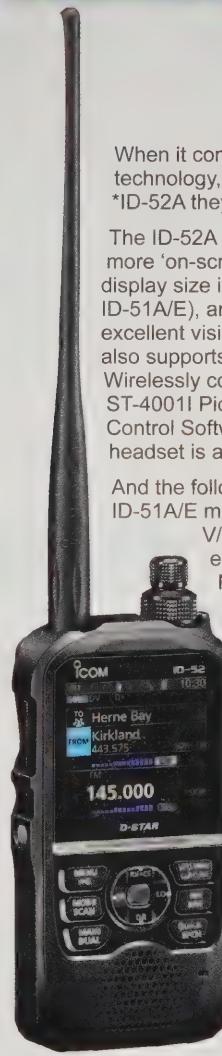
Dual Band HT

VHF/UHF D-STAR® Digital Transceiver ID-52A*

When it comes to the latest in handheld amateur radio technology, Icom is at the forefront. And with the recent *ID-52A they aim to remain that way.

The ID-52A is equipped with a color display. To provide more 'on-screen' information and increase readability the display size is increased to 2.3 inches (1.7 inches for the ID-51A/E), and a transfective display is used to achieve excellent visibility, even in bright sunlight. The transceiver also supports Bluetooth® communication as standard. Wirelessly connect to Android™ devices with ST-4001A/ST-4001I Picture Utility Software and RS-MS1A Remote Control Software installed. The optional VS-3 Bluetooth® headset is also available, for hands-free operation.

And the following features are enhanced from the previous ID-51A/E models. Simultaneous reception in V/V, U/U, V/U as well as DV/DV. Air band reception is expanded from VHF to UHF (225 to 374.995 MHz). The new model can be charged via micro USB connector. Audio output is significantly increased from 400 mW to 750 mW. The latest function of D-STAR® enables you to send, receive and view saved photos on an installed microSD card using only the ID-52A.



In addition to the above, the ID-52A has a variety of attractive features such as the DR function with easy set-up, built-in GPS receiver, micro SD card slot, IPX7 waterproof construction, and Terminal/Access Point modes. The ID-52A is a product that leads the amateur radio digital communications with enriched features that satisfy any users, from beginners to even heavy users who want to fully enjoy D-STAR®.

*This device has not been authorized by the rules of the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased, until authorization is obtained.

- 2.3" large transfective color display that is easy to see outdoors.
- Bluetooth® communication as standard.
- Simultaneous reception in V/V, U/U, V/U and DV/DV.
- Enriched D-STAR® features including the terminal mode/access point mode.
- UHF Air Band reception (225~374.995 MHz).
- Significantly increased audio output power to 750 mW (400 mW for ID-51 series).
- Accessories for the ID-51A/E such as battery packs and microphones can be used.
- IPX7 - 1 m depth of water for 30 minutes.

Loop Antenna AL-705



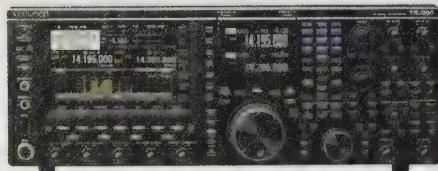
Bluetooth Headset VS-3



HF DESKTOP

KENWOOD

HF / 50 MHz Transceiver



Extreme Performance HF / 50 MHz TS-990S

The TS-990S raises the bar on HF performance and DX operating ease. Dual display and dual watch gives you the edge in DX contesting.

- Frequency range HF + 50 MHz.
- Output power: 5 - 200 watts.
- Built-in antenna tuner.
- Mode: SSB, CW, FSK, PSK, FM, & AM.
- Built-in switching power supply.
- Comm ports: USB A / B and LAN.
- Dual TFT display and dual receiver. Main display monitors target signal vicinity and sub display monitors actual target signal.
- Down conversion for all amateur radio bands on the main receiver.
- IP3 + 40 dBm mixer performance.
- Narrow-band high-IP roofing filters.
- TCXO ± 0.1 ppm for high stability receive.
- Dedicated triple DSP for main and & sub-receivers plus band scope.
- Remote PC operation.
- Data mode facilitates switching between external terminals.
- Advanced AGC – digital and analog.
- 2-step split frequency configuration for quick setup.
- Maximum of 120 memory channels.
- Dual channel memory allows access while receiving two frequencies simultaneously.
- Memory accessible during split/sub receiver operation.
- Two USB sockets on the front panel.
- Firmware updates via USB stick or cable.
- VCO division-type first oscillator divides high frequencies to ensure high C/N.
- Dedicated triple 32-bit floating point DSPs for main & sub receivers plus band scope, audio scope and S-meter.
- Cooling system capable of providing ample airflow to each unit to ensure a stable 200 W output.

Kenwood HF Specifications

Model	RX Frequency Range	Power Supply			Power Out watts					Mic Z	RX Type	SENS Level	RIT/XIT Range	Notch Filter	Audio Output
		Volt	XMIT	REC	AM	FM	SSB	CW	FSK						
TS-590SG	0.13 - 60 MHz	13.8 VDC	20.5 A	1.5 A	25	100	100	100	100	600	#	< 2 μ V	± 9.99 kHz	>70 dB	1.5 W
TS-890S	1.81 - 29.7 MHz 50 - 52 MHz	13.8 VDC	22.5 A	1.5 A	50	100	100	100	100	600	Double Superhet	< 2 μ V	± 9.99 kHz	>70 dB	1.5 W
TS-990S	0.13 - 30 MHz 50 - 54 MHz	110/220 VAC Inc.	720 VAC	120 VAC	50	200	200	200	200	600	Double Superhet	< 2 μ V	± 9.99 kHz	>70 dB	1.5 W

Double conversion SSB, CW, AM; Triple FM (1)170, 200, 425, 850 Hz

HF / 50 MHz Transceiver

Hi-Performance HF / 50 MHz TS-890S

The Kenwood TS-890S transceiver features a full down conversion receiver with h-mode mixer and High C/N 1st LO with four built in roofing filters: 500 Hz, 2.7 kHz, 6 kHz and 15 kHz (optional 270 Hz). This new transceiver has a 7 inch color TFT display and includes roofing frequency sampling band scope, auto scroll mode and multi information screen. Heavy-duty construction and a high-speed 100 W antenna tuner come standard. The configuration of the band scope receiver has changed from the superheterodyne system used in the TS-990S to 1st IF sampling using an A/D converter (14bit/39MHz), and FPGA digital down conversion. This means a change in scanning method from step FFT to FFT, achieving high- speed updates to the display irrespective of span settings.

- Cross tone.
- IF filter shape, AF filter.
- Audio peak filter, AGC quick recovery.
- Notch filter, noise blinder.
- Highly reliable 100 W final-stage amplifier circuit for HF and 50 MHz.



HF / 50 MHz Transceiver

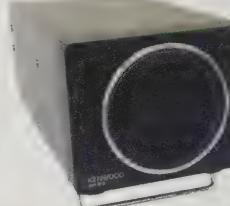
Class Leading Performance TS-590SG

The TS-590SG features a narrow-band roofing filter to significantly reduce interference from unwanted signals.

The resulting excellent RX performance reveals signals that would be hidden to lesser rigs. With IF AGC based on advanced DSP technology, Kenwood has essentially redefined HF transceiver performance.



- Has sharp 500 Hz / 2.7 kHz roofing filter and dedicated first mixer.
- Built-in electronic memory keyer.
- Programmable keys, 110 memory channels, memory scroll function, multiple scan functions.
- Advanced AGC through digital signal processing from the IF stage onward, digital IF filters, detection and demodulation, noise reduction and IF auto notch, IF AGC, AF digital signal processing, two types of noise reduction, and TX audio shaping.
- Morse code decoder function.
- Direct frequency entry, USB connectivity for PC control, remote control using a computer, optional voice guide and storage unit.
- Split function enabling quick setting.



External Speaker SP-23

The SP-23 speaker matches several Kenwood radios including the TS-590SG, TS-450S, TS-570S/D and the TS-690.

Single Band

Rugged 2 m + NOAA Weather TM-281A



On or off road, the TM-281A delivers powerful mobile performance with 65 W maximum output. The weather alert radio function checks the 1050 Hz tone from NOAA (US only). The radio features 200 memories (100 if memory channel names are assigned to the channels), menu for easy control and function selection, CTCSS or DCS to reject unwanted calls, easy to read large LCD alphanumeric display, FM and narrow band FM ready, and free PC memory control software is downloadable.

Accessories

External Speaker SP-890

Designed to match Kenwood's TS-890S, this external speaker features dual inputs and high cut and low cut filters as well as a headphone jack on the front.



Switching Power Supply KPS-15

Provides 13.8 V at 23 A continuous or 25 A surge. Housed in a heavy metal case with an internal cooling fan, this small supply weighs just over 3 lbs.

Prism Embroidery DUST-COVER

Leatherette dust cover custom crafted to fit each HF radio or amplifier. Contact HRO for a cover for your specific model.

Desk Microphone MC-90

A high-quality DSP-compatible desk top microphone with UP / DOWN, PTT / PTT lock functions, wired with an 8-pin round plug. It is supplied with two interchangeable baffled wind-screens which offer either a wide range frequency response or a "DX" response with peak response at around 3 kHz.

Desk Microphone MC-60

A unidirectional, dynamic moving-coil type desk microphone with PTT / PTT lock and swivel capability that also includes a switchable preamp. Batteries are included and must be installed for preamp operation. Dual impedance 500 ohm / 50 K-ohm slide switch selectable. Comes with 8-pin round connector but can be used with Kenwood RJ-45 equipped radios using optional MJ-88 adapter.

Dual Band

2 m / 70 cm GPS + APRS TM-D710G



Kenwood provides advanced APRS® ham radio equipment with the TM-D710G mobile transceiver. It offers even more features and versatility than competitors models. Comes with detachable control head and remote cable. The radio incorporates a 9-pin PC connection to program frequencies and other APRS® mapping programs. Your TM-D710G is a full dual-band radio so VHF+VHF / VHF+UHF / UHF+UHF operation is possible. Full digipeater functions allow anyone to set up a digipeater location wherever needed to help fill in APRS® nationwide network. Internet gateway operation is also possible for world-wide text communication over VHF.

- Includes built-in GPS and upgraded firmware.
- Output 50 W VHF / UHF.
- Receives 118-1300 MHz (cellular blocked).
- Two back light colors: amber / green.
- Alphanumeric dot-matrix LCD display.
- Easy-to-use menus. 1000 memories.
- Internal clock for APRS® time & date stamping.
- APRS® filter and sort functions.
- APRS® speed and altitude beaming.
- Three different APRS® grids.
- EchoLink® ready with 10 dedicated memories.
- APRS® QSY function, delay algorithm, voice alert and weather beaconing.
- Dual receive and NOAA weather alert.
- SkyCommand II.
- Sound card interface.
- VGS-1 voice guide and storage optional.
- NMEA 0183 GPS I/O port.
- Free downloadable MCP programming software.

2 m / 70 cm Echolink Ready TM-V71A



Kenwood's TM-V71A FM dual bander is equipped to shine in any mobile communications role. It features 50 W output, 1000 memory channels, multiple scan options and PC connectivity.

- High power output: 50 W on VHF / UHF.
- Same band dual receive (V/V, U/U, V/U).
- ARRL TravelPlus compatible.
- "Five-in-One" programmable memory storing five different operating profiles.
- 1000 split memory channels plus an additional 10 for programmable scan.
- PC programmable w/PG-5G (optional).
- Built-in CTCSS/DCS encoder.
- 104-code digital code squelch.
- Invertible front panel.
- Choice of backlight (amber / green).
- Voice guidance and storage option with optional VGS-1.
- Weather alert / RX (US only).
- EchoLink® Sysop mode for node terminal operation.
- EchoLink® memory autodialer.
- Wide band receive (118-524 MHz and 800-1330 MHz cellular blocked).
- Backlit MC-59 16-key handmic.
- Selectable repeater offset or auto repeater offset on VHF only.

Kenwood Mobile Specifications

Model	VDC	TX	RX	watts	Sensitivity
TM-281A	13.8	13 A	1.2 A	65	< .16 µV
TM-V71A	13.8	13 A	1.2 A	50/50	< .16 µV
TM-D710G	13.8	11.5 A	1.0A	50/50	< .16 µV

HANDHELDS

KENWOOD

Single Band

2 m Simplicity TH-K20A

This 2-meter handheld is a solid, value-packed radio. Simple controls make it easy to use.



- Tone alert (bell).
- Cross tone.
- 5.5 W RF output.
- Weather CH scan.
- VOX Included (optional headset required).
- Battery capacity indicator.
- Auto repeater offset.
- Direct function key.
- Firmware upgradable.
- Built-in CTCSS, DCS and 1750 Hz tone burst.
- Direct frequency entry.
- Auto offset.
- Time-out timer.
- Beat shift.
- Frequency shift.
- Key lock type select.

Dual Band 2 m / 70 cm - GPS & APRS TH-D72A

A great dual-band capable HT with enhanced GPS and APRS performance.



- 2 m / 70 cm transmit with wide band receive.
- Dual receive, V/V, U/U, V/U, U/V.
- 5 watts transmit.
- Built in GPS uses the SiRF Star III chipset (same as Garmin).
- GPS track logging function.
- Memory can be output to PC in KML format to be displayed on Google Maps.
- 1000 memory channels with 8 digit alpha name function.
- Built in 1200 / 9600 TNC AX.25 with KISS mode and digipeat functions.
- Mini USB connector built-in.
- Built-in Kenwood Sky Command II.
- Smart beaconing.
- External GPS ready, built in RS-232 com port.
- Air band RX with 8.33 kHz step.
- Free programming software available via download.

Tri-Band

GPS & APRS / D-STAR® TH-D74A

144/220/430 MHz TRIBANDER. Tri-band amateur radio packed with convenient features and the advantage of a digital transceiver with D-STAR®, and APRS support. Featuring a color transreflective TFT display that offers excellent visibility during the day or at night. Built-in GPS and Bluetooth support, as well as Micro USB and microSD/ SDHC. This radio is ready to harness the exciting developments in radio communications.



- Transmits: 144-148, 222-224.995, and 430-450 MHz.
- Four transmit power selections: (5 / 2 / .5 / .05 watts).
- Band A receives: 136-174, 216-260, & 410-470 MHz.
- Band B Receives: .1-524 MHz (76-108 WFM).
- High-performance DSP for quality audio.
- TFT color LCD for excellent visibility.
- APRS data transmission / reception.
- Built-in GPS. Built-in TNC.
- Store up to 100 stations.
- 1000 Alpha memories.
- D-Star® compatible.
- DV fast data mode.

- Wideband multi-mode reception.
- Flexible operation of voice mode and data mode.
- IF filter handles adjacent unwanted signals.
- IF output mode.
- Weatherproof to IP54 / 55 standards.
- Bluetooth® standard.

Kenwood Battery Packs

Model	VDC	mAH Rating	Desk Charger	Radio Series	HRO Price
PB-45	7.4	1800	KSC-32	TH-D72A	\$74.95
KNB-65L	7.4	1520	KSC-35S	TH-K20A	\$49.95
KNB-74LW	7.4	1100	KSC-25LSK	TH-D74A	\$75.95
KNB-75LW	7.4	1800	KSC-25LSK	TH-D74A	\$85.95



EXTENDED WARRANTY INFORMATION
ON PAGE 54!

Kenwood Handheld Specifications

Model	Frequency Range	Power Supply	Max Power Out	Sensitivity	Height Inches	Width Inches	Depth Inches	Weight Oz
TH-K20A	2M	6-9 VDC	5.5 watts	< .16uv	4.4	2.13	1.0	7.4
TH-D72A	2M/70CM	7.4 VDC	5 watts	< .16uv	4.78	2.28	1.31	13.1
TH-D74A	2M/1.25M/70CM	5-7.5 VDC	5 watts	< .18uv	4.72	2.2	1.33	7.13

YAESU
The radio

Desk Microphone

DUAL ELEMENT M-1

Revolutionary dual microphone configuration has both a dynamic element for depth and warmth and a condenser element for crisp highs. The M-1 lets you adjust the balance of the two microphone sources to create a sound that is just right for your voice. The nine-band graphic equalizer applies to each microphone element independently. A clip-on cowling enhances the response of both elements by minimizing aural interference. The solid aluminum die cast mic stand prevents sympathetic vibration. The central recessed control panel has been configured for ease of use. Check your voice in the headphones with the built-in record and playback feature. The built-in memory can store two different groups of settings for each microphone.

Single Element MD-100 AX8



This desk mic has selectable low cut filtering and high-emphasis active filtering that allow you to tailor the microphone response for optimum voice clarity or DX punch. It has a large push-to-talk switch and latching button, along with a large rotary up/down, slow/ fast control for scanning.



YAESU 3-YEAR WARRANTY

All current Yaesu amateur radios come with a three (3) Year Manufacturer's Warranty! The move to a three (3) Year Warranty is a firm commitment from Yaesu to continue to supply top quality products for many years to come.

High Performance HF Transceiver

The Legend Continues

The Transceiver that only Yaesu could create. It's New. It's Bold. It's a Legend in the Making.



HF/50 MHz - 100 W FTdx101D

The new FTdx101 series is an impressive achievement from Yaesu's elite "FTdx" design team, utilizing the very latest SDR technology and brilliantly executed firmware to yield a high-end transceiver that exudes quality and high performance. Building on the legacy of the legendary best-selling FT-101 line, the new FTdx101 series stands to create its own legacy as one of the best performers ever available to the elite-class operator.

HF/50 MHz - 200 W FTdx101MP



14MHz Band Blocking
Dynamic Range



14MHz Band Reciprocal
Mixing Dynamic Range



3rd Intermodulation
Dynamic Range

- Superb, class-leading close-in dynamic range.
- FTdx101D: 5-100 watts all modes except AM (25 W).
- FTdx101MP: 5-200 watts all modes except AM (50 W).
- 9 MHz IF roofing filter for excellent close-in IMD immunity.
- 400 MHz HRDDS (high resolution direct digital synthesizer).
- Hybrid SDR: direct sampling & NBW (narrow bandwidth) SDR technology.
- Completely independent dual receivers.
- High-Q VC-tuning front-end with general coverage RX.
- Yaesu renowned interference reduction system with 32-bit IF DSP and digital noise reduction and DSP auto notch.
- Large touch-panel precision color display and external display output.
- Rich, sparkling audio quality on both transmit and receive.
- Active band indicator with LED illumination

- of the operating band: facilitates rapid, mistake-free band changes.
- MPVD (multi-purpose VFO outer dial) provides sub VFO tuning, clarifier operation, VC-TUNE adjustment, VFO fine tuning, or a CS (custom selection) function.
- MP 200-watt version includes larger heatsink and fan, and uses external speaker/power supply.
- Superb, class-leading close-in dynamic range.

3DSS (three dimension spectrum stream) waterfall display, an all-new Yaesu exclusive!



HF DESKTOP

YAESU
The radio

HF/50Mhz Transceiver

Power and Features For Even The Most Demanding Operators



200 W Premium Class Transceiver FTDX5000MP-LIMITED

The FTDX5000MP-Limited HF / 50 MHz 200 watt transceiver is a premium class Yaesu radio with two independent receivers plus many unique options and accessories designed to meet the performance requirements of even the most demanding amateur operator.

- The FTDX5000MP-Limited robust and high-power final amplifier stage incorporates two super reliable FETs (VRF-150; drain-source voltage 170 V/gate source voltage ± 40 V, total device dissipation 300 W) in a push-pull configuration, offering a solid 200 W output (75 W class A operation).
- The FTDX5000MP-Limited has its own built-in power supply that operates on either 110 volts or 220 volts AC.
- Two (2) totally independent receivers give you performance and flexibility previously only provided by much more expensive radios.
- Super sharp "roofing" filters for VFO-A / main receiver. Filters are selectable between 300 Hz, 600 Hz, 3 kHz (6-pole crystal filter), 6 kHz, 15 kHz (4-pole MCF).
- Variable CW audio peak filter, and high / low-cut filtering created through the very latest in DSP technology. CW width: 50 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 Hz. CW pitch frequency: 300~1050 Hz (10 Hz steps).
- IF output (9 MHz) from VFO-A/ main receiver.
- Three electroluminescent clear displays included for easier operation and control of the sub-frequency, graphical

wave and menu function.
• 32-bit floating point DSP based on the TI TMS320C6727B (@300 MHz), one EACH for VFO-A and VFO-B.
• True analog meter precision. Enjoy the huge size metering system and instant reaction time.
• Provides loads of practical level indication that clearly show settings of microphone gain / RF power / CW pitch / keyer speed / processor level / VOX delay time / break-in delay time.

Station Monitor SM-5000

The Yaesu SM-5000 station monitor adds sophistication and new capabilities to your FTDX5000. It has an enhanced stereo speaker system with superb audio quality. 18.5 x 1.8 x 7.2 inches (462x45x181mm). It sits nicely atop your radio and provides valuable insight. This is a great and helpful add-on to your FTDX5000.

HF/50Mhz Transceiver



100 W Top Performing Transceiver FTDX3000

The FTDX3000 is one of the long line of top-performing Yaesu FT DX transceivers. It inherits the design concepts of the FTDX5000 transceiver that has received high praise from all over the world by those pursuing the highest ideal of amateur HF communication equipment. The FTDX3000 exhibits phenomenal multi-signal characteristics first demonstrated in the top-rated FTDX5000. Using the two signal dynamic range measuring method with 10 kHz signal separation, the FTDX3000 performance is 108.5 dB, IP3 +37 dBm. With frequency separation of only 2 kHz between the desired signal and an interfering signal, the dynamic range measures 106 dB and IP3 +33 dBm. With all its features and amazing performance at a truly affordable price, the FTDX3000 is a terrific rig for home or a DXpedition.

- FM and AM wide and narrow modes.
- IF DSP for QRM rejection.
- High speed spectrum scope.
- AF scope display.
- RTTY / PSK31 encoder / decoder (optional).
- 3 antenna connectors.
- Built-in high-speed automatic antenna tuner included. The antenna tuner uses LC switching. It has a large capacity 100 channel memory; the tuning data is automatically memorized to reduce tuning time when changing frequency.
- USB interface equipped.
- Wide viewing angle 4.3" LCD display.
- Independent frequency display with wider viewing angle and higher contrast.
- Signal output for an external receiver and 9 MHz IF.
- USB for firmware updates.
- IF width and IF shift functions.
- Fifteen separate BP filters.
- 3 kHz roofing filter for SSB and 300 Hz (optional) and 600 Hz roofing filters for CW.
- DSP digital noise reduction reduces ear fatigue.
- "Contour" tailors the received audio signal without changing the bandwidth.
- IF notch has attenuation characteristics of 70 dB or more.
- Many CW features including CW audio peak filter, CW decode, CW spot, auto zero-in display, full break in, four message memory (50 characters each) automatic "beacon" keyer mode and separate key jacks on the front and rear panels.
- Effective QRM rejection is achieved using 32-bit high speed floating decimal point DSP. The signal is processed with the high speed 300 MHz clock frequency.
- Microphone amplifier with parametric equalizer.
- IF DSP speech processor.
- 5 digital voice messages. Each memory channel is capable of storing up to 20 seconds of audio using the optional DVS-6.
- Dimensions 14.4" x 4.5" x 12.3" W x H x D) and weighs only 22 pounds.
- External control (CAT) is possible via USB or serial port allowing for remote control.

AM/FM/CW/SSB + C4FM Digital



HF/50/144/440 MHz PORTABLE FT-991A

The next-generation FT-991A now features a real-time spectrum scope and a multi-color waterfall display. The FT-991A operates on SSB, CW, AM, FM, packet, and system fusion C4FM digital. Whether you operate at home, mobile or in the field, the FT-991A will provide outstanding fundamental performance and invite expansion into a full-featured base station. Uncompromising receiver circuit ensures excellent performance from HF to VHF / UHF.

- Receive coverage 160m through 70cm.
- Transmits 100 W (HF), 50 W (2 m), 50 W (70 cm).
- 3.5 inch TFT full-color touch panel operation.
- High speed spectrum scope with automatic control built-in.
- Roofing filter 3 kHz and 15 kHz.
- Triple conversion with 1st IF frequency of 69.450 MHz on all bands.
- High accuracy TCXO ± 0.5 ppm.
- Separate RF amps for best characteristic on each band.
- High resolution DDS and PLL local oscillator.
- 32 bit high speed floating point IF DSP.
- IF width and IF shift.
- Contour, DNR, IF Notch.
- APF for CW only.
- 160-6m, high speed automatic antenna tuner.
- Full color TFT / LCD display. Four user defined function keys.
- Electronic keying with break-in support, electronic keyer weight control.
- Message memory function.
- 50 tone CTCSS encoder / decoder for FM operation.
- Compatible with optional ATAS-120 Active Antenna System.

Yaesu HF Specifications

Model	Bands	Volts AC	Volts DC	TX Amps	RX Amps	AM	FM	SSB	CW	MIC Z	RX Type	Sens	RIT/XIT Range	Audio Power
FTDX5000	HF/50Mhz	90-264		5.5 A	70 VA	50 W	200 W	200 W	200 W	200-10K	Triple	< .2 dBu	± 9.99 kHz	2.5 W
FTDX3000	HF/50Mhz		13.8	23 A	2.1 A	25 W	100 W	100 W	100 W	200-10K	Double	< .2 dBu	± 9.99 kHz	2.5 W
FTDX101D	HF/50Mhz		13.8	23 A	3.5 A	25 W	100 W	100 W	100 W	200-10K	Double	< .16 dBu		2.5 W
FTDX101MP	HF/50Mhz	100-201		720 VA	100 VA	50 W	200 W	200 W	200 W	200-10K	Double	< .16 dBu		2.5 W
FT-891	HF/50Mhz		13.8	23 A	2.0 A	25 W	100 W	100 W	100 W	200-10K	Triple	< .158 dBu HF < 125 dBu 6m	± 9.99 kHz	2.5 W
FT-991A	HF 50 MHz 144 Mhz 440 MHz		13.8	23 A	2.2 A	2-25 W	100 W 50 W 2M 50 W 70CM	100 W 50 W 2M 50 W 70CM	100 W 50 W 2M 50 W 70CM	200-10K	Triple	< .158 dBu HF < 125 dBu 6m < .111 dBu VHF. UHF	± 9.99 kHz	2.5 W

Matching Audio



External Speaker SP-10

The SP-10 is an external speaker for the popular FT-991A and FT-891. This speaker produces the high-quality sound these receivers generate thereby providing clear and crisp audio for reliable communications on all the HF, VHF, and UHF bands. Maximum input power is 3 W. Speaker impedance is 8 ohms. **HRO Price: \$149.95**



External Speaker SP-20

The SP-20 speaker is an attractive match for the FT-dx3000D, providing high quality, crisp output sound for reliable communications. Maximum input power is 3 W. Speaker impedance is 8 ohms. **HRO Price: \$169.95**

Dust Covers



Prism Embroidery CUSTOM DUST COVERS



Custom designed and elegantly manufactured dust covers for a variety of Yaesu HF radios and amplifiers. Crafted out of leatherette that is cut to the designated size via templates that are designed using the manufacturer's specifications. Includes a soft felt lining. The perfect way to protect your investment when not operating. Contact HRO for more info.

HF MOBILE/COMPACT

YAESU
The radio

Mobile HF Transceiver

HF/50 MHz Compact Mobile FT-891

A great mobile transceiver in a compact package providing uncompromised performance for both the mobile and stationary amateur operator. High end 32-bit floating point DSP enhances the operating experience providing a cleaner, clearer signal and reducing overall operator fatigue creating a more enjoyable environment for any amateur operator.



- Receiver coverage 30 kHz to 56 MHz.
- FM, AM, CW and SSB.
- 100 W SSB / CW / FM. 25 W AM.
- Large transmit / receive indicator.
- A native USB connection supports PC connectivity with a single cable, allowing for full rig control via a virtual serial port (VCP).

- Large diameter Main Tuning Dial (1.6" / 41mm) with torque adjustment.
- Three programmable front panel function keys.
- Pop-up menu for quick and easy navigation.
- Optional FC-50 antenna tuner.
- Compatible with optional ATAS-120 Active Antenna System.

Programming Kits

HF Radios:

YPS-818-USB..... FT-818ND
ADMS-4BU-USB FT-857/897
ADMS-450-USB FT-450D
ADMS-991-USB FT-991
ADMS-DX3000-USB FTdx3000
ADMS-DX5000-USB FTdx5000

Mobiles Radios:

ADMS-2H-USB..... FT-8900
ADMS-2900-USB FT-2900
ADMS-2900-USB FT-2980
YPS-7250-USB..... FTM-7250
ADMS-M100-USB FTM-100DR
ADMS-M400-USB FTM-400DR

Handhelds:

ADMS-1J-USB..... FT-60R
ADMS-FT2D-USB FT-2DR
ADMS-FT25-USB FT-25R
ADMS-FT65-USB FT-65R
ADMS-FT70D-USB FT-70DR
ADMS-VX6-USB..... VX-6R
ADMS-270-USB FT-270



External Speaker MLS-100

This high-performance, external communications speaker matches the impedance and output requirements of most Yaesu transceivers. It mounts on a swivel stand that is supplied along with mounting screws and bolts. A 6.5 foot (2m) audio cable that terminates in a 3.5 mm mono mini plug is also supplied.

HRO Price: \$46.95



YAESU 3-YEAR WARRANTY

All current Yaesu amateur radios come with a three (3) Year Manufacturer's Warranty! The move to a three (3) Year Warranty is a firm commitment from Yaesu to continue to supply top quality products for many years to come.

Compact HF/VHF/UHF Transceiver

All-Mode QRP Portable FT-818ND

The ultimate 'shack-in-a-box'. All-mode and coverage from HF all the way through the UHF bands. Ultra compact and with its own SBR-32 1900 mAh NiMH battery you can take it anywhere. Carrying strap included.



- Fully self-contained battery-powered low-power amateur transceiver for portable, camping, or mountain use.
- 6 W SSB/CW/FM, 1 W AM.
- Operates on 160-10m, HF, 6m, 2m, and 70cm bands.
- Operating modes: USB, LSB, CW, AM, FM, WFM, and digital (AFSK), packet (1200 / 9600 FM).
- 208 memory channels / 10 memory groups.
- Improved frequency stability

- ±0.5 ppm: built-in TCXO-9.
- IF shift, IF noise blanker, IPO, & ATT.
- CW "semi-break-in," CW reverse, CW pitch control.
- Built-in electronic keyer.
- ARS auto repeater shift.
- Dual VFOs, split-frequency operation, IF shift, clarifier "RIT", IF noise blanker; RF gain and squelch control, IPO (Intercept Point Optimization).
- Built-in CTCSS encoder/decoders.

Automatic Antenna Tuner

All-Band Auto Tuner FC-40

The FC-40 is a microprocessor-controlled antenna impedance matching network designed to provide all-amateur-band transmitting capability with the FT-450D/891 transceivers when used with an end-fed random wire or long whip antenna. The FC-40 mounts near the antenna feedpoint and makes use of the control circuitry built into the transceiver, allowing the operator to control and monitor automatic operation of the tuner **HRO Price: \$274.95**.

- Operating Frequency Range: 1.8 - 54 MHz with 20+ m end-fed wire, 7 - 54 MHz with YA-007 HF 2.5 m mobile whip antenna.
- Maximum power: 100 W.
- Tune-up power: 4 W ~ 60 W.
- Tune-up time: 10 sec max.

- Impedance matching memories: 100 channels.
- Power supply: 13.8 V DC ±15%
- Case Size (WHD): 9.4" x 7" x 2.1" (236 x 175 x 53 mm.) • Unit Weight: 2.6 lbs. (1.2 kg.)

Power Supplies

25 Amp | FP-1030A

The FP-1030A is a regulated linear supply at 25 amps and includes meters. **HRO Price: \$229.95**



23 Amp | FP-1023A

The FP-1023A has 23 amps continuous and 25 intermittent. This low-profile switching power supply operates on 110 or 220 VAC. **HRO Price: \$149.95**



ACCESSORIES/MOBILE

Dual Band



2 m / 70 cm Analog & Digital GPS & APRS FTM-300DR

The FTM-300DR provides stable and reliable 50W of clean output power. It is equipped with a big, heavy-duty heatsink that includes our exclusive FACC (Funnel Air-Convection-Conductor Wind Tunnel) to cool the radio while operating. Real Dual Band Operation (V+V, U+U, V+U, U+V) is available with two independent receivers, and the FTM-300DR supports simultaneous C4FM digital monitoring for both the A and B bands. It has a 2-inch high-resolution QVGA full-color TFT display

- 50 W Stable High-Power
- Dual Band Operation (V+V, U+U, V+U, U+V) and Simultaneous C4FM monitoring.
- Large-capacity 1104 channel memory.
- Receiver for Analog node station as well as Digital node station with FTM-400D.
- 2-inch High-Resolution QVGA Full-Color TFT Display and Demountable Front Panel Controller.
- Memory Channel Band Auto

- Grouping Function (AIR, VHF, UHF, GEN).
- High-Speed & High-Resolution Band Scope.
- 3 W audio power speaker with two individual terminals for the external speakers.
- Built-in Bluetooth unit for hands-free operation with the SSM-BT10 (optional).
- Micro SD Slot (up to 32GB).
- Built-in 66ch high precision GPS receiver and external GPS device connectivity.

Dual Band



2 m / 70 cm Analog & Digital GPS & APRS FTM-400XDR

Operate on 2m and 70cm with this mobile transceiver. Select power of 50, 20, or 5 watts on either band. Enjoy wideband receive from 108-470 and 800-999 MHz (less cellular).

Four scan modes: VFO, memory, programmable memory, or selected memory. Each memory can store frequency, mode, tag, repeater information, tone, DCS, antenna squelch information, memory skip information, and transmission output. Set the screen background to any of 5 colors (green, blue, orange, purple or gray). Capture images and video by connecting a USB camera (not supplied) and transmit and receive them. There is a port for a microSD card.

- Transmit bands - 2m / 70cm. Wideband RX
- Double conversion receiver with twin RX.
- Large, vibrant color display.
- 500 memories per band.
- Internal clock / calendar.
- Image receive / transmit.
- Enhanced GPS / APRS®.
- 1000 memories in 2 banks; four scan modes.
- Band scope & spectrum scope.
- ARTS™ and optional Bluetooth®.
- Optional voice guide speaks operating frequency and records received signals.

Internet Linking Kit

Wires-X Connection Kit HRI-200



WIRES-X supports both analog and the new C4FM digital radio communications modes. Yaesu's System Fusion II, already the fastest growing Amateur Radio Digital System, is certain to see yet another peak in interest thanks to WIRES-X!

- WIRES-X allows communications between both C4FM digital and conventional FM stations.
- High quality C4FM voice.
- WIRES ID: Adopted a simple user ID system using alphanumeric characters.
- Smart Access: WIRES-X automatically connects to nodes and rooms by utilizing the Smart Access function. (Digital node station only).
- Preset Search: User can find local node station and receive their frequency setting data for automatic setup. (Digital node station only).
- Activity Monitor: IDs of active nodes and rooms can be searched from the C4FM transceiver via a local node. (Digital node station only).

- News Station: Stores and reads digital data such as text, images and audio data. (Digital node station only).
- Supports analog FM mobile transceiver for analog node station as well as digital node station with FTM-400XDR.
- 2-inch high-resolution QVGA Full-Color TFT display and demountable front panel controller.
- Memory channel band auto grouping function.
- High-speed & high-resolution band scope.
- Built-in Bluetooth unit for hands-free operation with the SSM-BT10 (optional).
- Micro SD Slot (up to 32GB).
- Built-in 66ch high precision GPS receiver and external GPS device connectivity.

Camera Speaker/Microphone MH-85A11U

Camera/Microphone for FT-2DR, FTM-400XDR, FT-3DR, and the FT-1DR. Simple to use, point and shoot operation. Takes photos in 320x240 that you can transfer via digital mode to other Yaesu radios.



Desktop Stand With Cooling Fan SMB-201

A great stand to mount your mobile on the desktop and to keep it cool while operating. A must if you run hi-power. Compatible With FTM-400DR, FTM-100DR, FT-8900R, FT-8800R, and FT-7900R.



Waterproof External Speaker MLS-200

Perfect for boats, off-road vehicles, and installations that are exposed to dust and water. Comes with bracket. Cord terminates in 3.5mm stereo plug.



MOBILE

YAESU
The radio

Single Band Analog

Ultra-Rugged 2 m Mobile FT-2980R

This 144 MHz 80 watt FM mobile transceiver has 3 watts of RX audio, and an MH-48A6JA DTMF microphone. As its model name suggests, the new FT-2980R arrives with the solid feature configuration and mechanical toughness of the ever popular FT-2900R, with more output power now at 80 watts!

The FT-2980R four output power settings: 80 W, 30 W, 10 W and 5 W are selectable, allowing each user to choose the power they want for their operating style and situations. A massive heatsink guarantees a solid 80 watts of RF power with no cooling fan needed. Thanks to a loud 3 watts of audio output, the operator can enjoy CLEAR reception, even in noisy environments. Also included are: alphanumeric channel display, 200 memory channels, CTCSS and DCS encode/decode built-in, versatile scanning capability, wide/narrow deviation selection, plus an interactive programming menu.



External Speaker | MLS-100



This high-performance, external communications speaker matches the impedance and output requirements of most Yaesu transceivers. It mounts on a swivel stand that is supplied along with mounting screws and bolts. A 6.5 foot (2m) audio cable that terminates in a 3.5 mm mono mini plug is also supplied. **HRO Price: \$46.95**

Waterproof Speaker | MLS-200



Perfect for boats, off-road vehicles, and installations that are exposed to dust and water. Comes with bracket. Cord terminates in 3.5mm stereo plug. **HRO Price: \$38.95**

Single Band Analog

Simple 2 m FTM-3100DR

The FTM-3100R is a ruggedly built yet compact VHF-FM mobile transceiver, providing high output power of up to 65 watts. One of the distinguishing features of this mobile transceiver is the front panel speaker delivering 3 watts of loud and crystal clear audio.



- Frequency range:
Transmit: 144 - 148 MHz,
Receive: 136 - 174 MHz.
- Double conversion
superheterodyne.
- 220 alpha-numeric memory
channels.
- 3-year warranty.
- CTCSS and DCS encode/
decode.
- High stability TCXO ± 2.5 ppm).
- Severe weather alert.
- DTMF microphone MH-48A6JA.
- Sensitivity 0.20uV (HAM Wide), 0.22uV (HAM Narrow).
- Output power: 65 / 30 / 5 W.
- Front-firing speaker delivers
loud audio.

Dual Band Analog/Digital

FM + C4FM Dual Band FTM-7250D



The FTM-7250 is a no-compromise dual band transceiver that operates both FM analog and C4FM digital audio modes. With plenty of power and a compact design you'll soon discover why this radio is so popular. A front-firing speaker provides clean and clear audio in almost any situation.

- 50 watts for high power transmit.
- FACC (funnel air-convection conductor wind tunnel cooling).
- 3 watts powerful and clear audio with a front facing speaker.
- Large LED with AMS / mode indicators.
- System Fusion II compatible with sophisticated digital group - ID (DG-ID) operation.
- C4FM and conventional FM analog operation.

Yaesu Handhelds

Model	Frequency	Mode	Power Supply	Watts Out	TX Amps	RX Amps	Sens	Height in (cm)	Width in (cm)	Depth in (cm)	Weight oz (g)
FT-60R	2m / 70cm	FM	7.2 VDC	5	1.5	125 mA	.16 dBu / 12 dB	4.3 (10.9)	2.3 (5.8)	1.2 (3.0)	13.5 (370)
FT-65R	2m / 70cm	FM	7.4 VDC	5/2.5/0.5	1.5/1.7	205 mA	.2 dBu / 12 dB	4.1 (10.4)	2.5 (5.2)	1.2 (3.0)	9.17 (260)
FT-3DR	2m / 70cm	FM	7.4 VDC	5/2.5/1.3	1.9	170mA	.2 dBu / 12 dB	3.95 (10)	2.44 (6.2)	1.28 (3.2)	9.95 (282)
FT-4XR	2m / 70cm	FM	7.4 VDC	5/2.5/0.5	1.5/1.7	190 mA	.2 dBu / 12 dB	3.5 (9)	2.1 (5.2)	1.2 (3.0)	8.82 (250)
VX-6R	2m / 70cm **†	FM	7.4 VDC	5	1.5 1.6/1.8	150 mA	.16 dBu / 12 dB	3.4 (8.7)	2.3 (5.8)	1.1 (2.8)	9.5 (270)
FT-70DR	2m / 70cm †	FM	7.4 VDC	5/2/0.5	1.6	180 mA	.16 dBu / 12 dB	2.36 (6.0)	3.86 (9.8)	1.3 (3.3)	8.99 (255)

Power output can be increased depending on the battery pack. †Extended range.

Simplified User Manuals

Nifty Mini-Manuals

Fully laminated, spiral bound booklets, 4.25 x 8 inches, providing simplified step-by-step instructions for all your radio's features. These short-form manuals are smaller, more durable, and easier to use than manuals normally supplied with a radio.

Model	Description	HRO Price
NIFTY-FT2DR	Mini-Manual	\$24.95
NIFTY-FT3DR	Mini-Manual	\$23.95
NIFTY-FT60R	Reference Card	\$6.95
NIFTY-FT250R	Reference Card	\$5.95
NIFTY-FT270R	Reference Card	\$6.95
NIFTY-VX6R	Mini-Manual + Reference Card	\$20.95
NIFTY-FT65R	Reference Card	\$6.95
NIFTY-FT70DR	Mini-Manual	\$18.95
NIFTY-FT4XR/VR	Mini-Manual	\$16.95

Programming Software



RADIO PROGRAMMING MADE EASY

For over 23 years, RT Systems has produced the most up-to-date amateur radio software for all the top radio manufacturers. Along with the most reliable software, RT Systems makes the best cables for programming and/or control. RT Systems removes the worry over programming or managing your radio memories.

Model	RT Software	HRO Price
FT-2DR	ADMS-FT2D-USB	\$48.95
FT-3DR	YPS-FT3D-USB	\$48.95
FT-60R	ADMS-1J	\$38.95
FT-250R	ADMS-250	\$38.95
FT-270R	ADMS-270	\$38.95
VX-6R	ADMS-VX6	*\$38.95
FT-65R	ADMS-65-USB	\$48.95
FT-70DR	ADMS-70D-USB	\$48.95
FTM-400XDR	ADMS-M400-U	\$24.95

MARS/CAP Modifications

MARS is the Military Auxiliary Radio Service. CAP is Civil Air Patrol. They use frequencies near ham bands.

Ham Radio Outlet is able to modify most radios to operate in the MARS/CAP service frequencies. Contact HRO for details.

*MARS/CAP modification are for those authorized with one or the other organization, and the frequencies are for official use only.

Yaesu Handheld Accessories

Accessory	Model	FT 60R	25R 65R	FT 4XR	VX 6R	FT 2DR	FT 3DR	HRO Price
Mic Adapter	CT-44	•				•	•	\$16.95
Mic Adapter	CT-91				•			\$17.95
Bluetooth Headset	SSM-BT10						•	\$34.95
VOX Headset	SSM-64A				•			\$59.95
VOX Headset	SSM-63A	•				•	•	\$69.95
VOX Earpiece Mic	SSM-512B		•					\$29.95
Speaker/Mic	SSM-17A	•				•	•	\$39.95
Speaker/Mic	MH-57A4B				•		•	\$27.95
Speaker/Mic	MH-73A4B				•			\$47.95
Compact Speaker/Mic	SSM-17B		•	•				\$24.95
Camera/Mic	MH-85A11U					•	•	\$134.95
Ear Piece Mic	SSM-55A				•			\$39.95
Ear Piece Mic	SSM-57A	•				•	•	\$34.95
DC/DC Cigar Adapter	SDD-13	•			•	•	•	\$27.95
DC/DC Adapter	EDC-6	•			•	•	•	\$8.95
Wall Charger	SAD-24B	•			•	•		\$28.95
Wall Charger	SAD-25B						•	\$29.95
AC Adapter	SAD-26B		•					\$19.95
Rapid Charger	CD-15A				•			\$39.95
Charger Cradle	SBH-13	•						\$23.95
Rapid Charger	SBH-22		•	•				\$19.95
Charger Cradle	CD-26							\$25.97
Charger Cradle	CD-41					•	•	\$37.95
Desk Top Rapid Charger	VAC-370	•						\$74.95
Battery 1400 mAh	FNB-80LI				•			\$74.95
Battery 1300 mAh 7.4 V	FNB-83	•						\$35.95
Battery 1100 mAh 7.4 V	FNB-101LI					•	•	\$52.95
Li-ion 2200 mAh	SBR-14LI					•	•	\$79.95
Li-ion 1950 mAh	SBR-25LI		•					\$34.95
Li-ion 1950 mAh	SBR-26LI		•					\$44.95
Li-ion 1750 mAh 7.4 V	SBR-28LI			•				\$35.95
Battery Case AA	FBA-23				•			\$29.95
Battery Case AA	FBA-25	•						\$18.95
Battery Case AA	FBA-39					•	•	\$31.95
Cloning Cable	CT-27	•						\$14.95
Cloning Cable	CT-168					•	•	\$24.95
Cloning Cable	SCU-36		•	•				\$19.95
Programming Cable	SCU-35		•	•				\$19.95
Programming System	YPS-FT3D						•	\$48.95
Data Cable (Dsub>9 pin)	CT-169					•	•	\$36.95
Data Cable (11 pin>2.5)	CT-170					•	•	\$29.95
Data Cable (2.5>2.5)	CT-176					•	•	\$24.95
WiresX Cable	SCU-39					•	•	\$59.95
Ant Adapter SMA-BNC	CN-3	•			•	•	•	\$8.95
Radio Case (soft)	CSC-91				•			\$16.95
Soft Carry Case	SHC-24					•		\$19.95
Soft Carry Case	SHC-34						•	\$24.95

HANDHELDS

YAESU
The radio

Dual Band

FM & C4FM GPS & APRS FT-3DR

The FT-3DR is 5 W of RF power output in a light weight, compact design. Battery power saving settings are available for each frequency band with TX output power levels (5 W / 2.5 W / 1 W / 0.3 W) individually selectable. Enjoy loud, clear C4FM voice quality from 700 mW of audio power. Real dual band operations (V+V, U+U, V+U, U+V) are available with two independent receivers, and the FT-3DR supports simultaneous C4FM digital monitoring for both the A and B bands (C4FM & C4FM standby).

Color Touchscreen



- C4FM digital V/D mode, voice FR mode, data FR mode, and conventional FM mode in one unit.
- Built-in Bluetooth for hands-free.
- Highly visible 320 x 240 dot matrix full-color TFT touch panel display.
- New CAM (club channel activity monitor) function.
- Band scope function for monitoring up to 79 channels centered around the current VFO frequency with high-speed.
- System Fusion II compatible AMS (automatic mode select), DG-ID (digital group ID), and smart navigation functions.
- WiRES-X portable digital node compatible.
- Built-in 66 channel high-sensitivity GPS receiver.
- Snapshot feature.
- Voice recording function for the received and transmitted audio.
- Built-in On/Off timer, automatic power off (APO) and time-out timer (TOT).
- Micro SD card slot (up to 32GB).
- IPX5 rating water protection.
- 7.2V 2,200 mAh Lithium Ion battery pack (SBR-14LI) included.
- Standard SMA antenna connector allows optional antennas to be used.
- Belt clip included.

Dual Band

2 m / 70 cm Analog FT-60R

One of the most popular radios ever produced! The FT-60R is a staple in most amateur operators arsenal of radios. Great as a 1st radio or as an addition to many. Rugged and built to last. With 5 watts of power plus strong, crisp, clear audio output from a large speaker, and an easy to read display you'll soon understand what makes the FT-60R a must-have standard.

Extended Frequency Receive Coverage



- Receives 108-520 MHz and 700-999 MHz (cellular blocked) for monitoring amateur, public safety, business, marine, aircraft, government communications.
- Tough die-cast, water resistant construction. Built to endure years of use and abuse.
- 1,000 memories w/ alphanumeric labels.
- 5 Watt output.
- CTCSS and DCS (encode/ decode) with split tone; DCS encode only capable.
- ARTS™.
- One-touch to NOAA.
- Nine DTMF auto-dial memories.
- WIRES™ Internet linking.
- Huge LCD display.
- Two front panel programmable keys.
- Automatic repeater shift.

Dual Band

2 m / 70 cm Analog + C4FM Digital FT-70DR

The new FT-70DR is the compact and very attractively priced Yaesu System Fusion transceiver with both conventional FM operation and the advanced C4FM digital mode. The FT-70DR provides up to 5 W of reliable RF power, and its large front speaker delivers 700 mW loud audio output. AMS (automatic mode select) detects the operating mode of the received signal and automatically and instantly switches the receiver to the appropriate mode. Multi-colored LED mode indicator on its front case also assists an operator to enable hassle-free operation.

DG-ID (Digital Group Identification) and DP-ID (Digital Personal Identification) are the useful features

newly included in the FT-70DR to simplify the GM operation. Very simply, the transceivers selecting the same DG-ID or DP-ID can communicate, but not others. Between 00 and 99 DG-ID and DP-ID are selectable

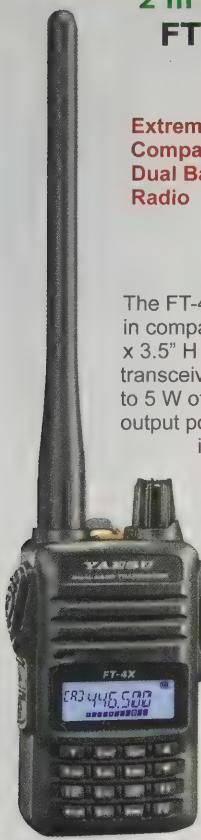


IP54 rating (dust / water protection) construction, wide band receive coverage of 108 - 579.995 MHz, and versatile scanning capabilities make this a very robust handheld.

- System Fusion II compatible.
- 700 mW audio output.
- Wide band receive coverage of 108 - 579.995 MHz.
- 1,105 channel memory.
- CTCSS / DCS operation.
- Large multi-color mode indicator.
- Versatile scanning capabilities (programmable VFO, memories, & priority channel scans).
- 7.4 V 1,800 mAh Lithium Ion battery pack (SBR-24LI) Included.
- RF Squelch.
- WX channels with 'severe weather' alert (US version).
- Mini USB port for memory management and software updates.
- Transceiver to transceiver cloning with optional cloning cable (CT-27).
- Automatic power-off feature, RF squelch, transmitter time out timer, and busy channel lock-out.
- IP54 rating (dust / water protection) construction.
- Standard SMA antenna connector allows optional antennas to be used.

Dual Band

2 m / 70 cm
FT-4XR



**Extremely
Compact
Dual Band
Radio**

The FT-4XR is the ultimate in compact designed (2.1" W x 3.5" H x 1.2" D) handheld transceivers, providing up to 5 W of stable and reliable output power thanks to Yaesu's integration of highly efficient Bridged Transless (BTL) amplifier technology.

Go ahead and drop the FT-4XR into your go-bag, glove box, or slip it into your back pocket easily. With such a slim and compact design you'll barely notice it but always have it when you need it. It's the ultimate way to take 2m and 70cm with you virtually anywhere!

Its small size doesn't mean it is small on audio. The FT-4XR handheld transceiver has a 1.4-inch front speaker that delivers 1 watt of powerful clear and crisp intelligible audio. So no matter the environment you'll always be able to hear and respond.

- Three selectable TX power settings: 5 W (high) / 2.5 W (middle) / 0.5 W (low).
- More than 15 hours operating time with supplied 1,750 mAh Li-ion battery pack.
- Large-capacity 200 memory channels.
- Selectable frequency steps (5 / 10 / 12.5 / 15 / 20 / 25 / 50 / 100 kHz).
- WX channels with 'severe weather' alert.
- PC programmable with optional programming cable (SCU-35).
- Transceiver-to-transceiver cloning with optional cloning cable (SCU-36).



**YAESU
3-YEAR
WARRANTY**

All current Yaesu amateur radios come with a three (3) Year Manufacturer's Warranty! The move to a three (3) Year Warranty is a firm commitment from Yaesu to continue to supply top quality products for many years to come.

Dual Band

2 m / 70 cm
FT-65R



**Workhorse
Dual Band**

An excellent dual band transceiver based on the ever popular FT-60R. Very compact and ruggedly constructed with three selectable power settings. A large front-firing speaker provides a full 1 watt of crisp, clear audio even in noisy environments. Capable of over 9 hours of operation and 11.5 hours of operation with the optional 2500 mAh Li-Ion battery.

A variety of user requested features such as versatile scanning capabilities, programmable VFO scan, memory scan, weather alert scan, FM broadcast receive, auto power off and PC programmability makes this an excellent value radio.

- Selectable output power settings - 5 W / 2.5 W and 0.5 W.
- Speaker provides 1 watt audio input.
- Supplied 1950 mAh Li-ion battery pack provides more than nine (9) hours operation. Optional higher capacity 2500 mAh Li-ion battery pack provides more than 11.5 hours of operation.
- LED display.
- Four (4) quick recall keys (QRK) are individually user-programmable to store and recall favorite frequency settings and to be used as shortcut keys to set mode menu items.
- White LED flashlight.
- Programmed VFO scan, memory scan, priority channel scan, weather alert scan.
- WX channels with 'severe weather' alert (US Version only).
- VOX operation.
- FM broadcast receiver.
- ARTS (automatic range transponder system).
- DTMF operation - CTCSS / DCS operation.
- Busy channel lock-out.
- Battery saver function.
- Automatic power-off.
- Transmitter time-out-timer.
- Rugged and durable construction.

Tri-Band

2 m / 1.25 m / 70 cm
VX-6R



**True
Tri-Band
Coverage**

Don't let your operating environment stop you from enjoying radio on-the-go. For 'anywhere' communication you'll find the VX-6R just what you need. It is both rugged and submersible (JIS7: 30 minutes of submersion at depth of 3 feet), which means you can take it just about anywhere.

A front firing speaker delivers strong audio. The dual-selector knob allows for easy operation of memory selection, VFO, volume level, and settings in one convenient location. Supplied with a strong tri-band antenna this HT has everything.

- Covers 504 kHz to 998.99 MHz (with cell blocked).
- 5 watts of power 144 and 440 MHz bands; 1.5 watts on 222 MHz.
- One-touch memory access.
- FNB-80LI 1400 mAh lithium-ion battery pack standard.
- Emergency automatic ID.
- Security password.
- CW trainer.
- Enhanced paging and code squelch (EPCS).
- Wake-up battery saver.
- 900 memories with alpha-numeric labels.
- Compact: measures just 2.3" x 3.5" x 1.1" WHD.
- Oversized volume and squelch knobs.

**HT QUESTIONS?
HRO HAS THE ANSWERS!**

We are here to help. Ham Radio Outlet salespeople are available to answer your questions about HTs, receivers, and other products. Simply contact your local HRO store for more information.

SCANNERS

uniden®**Base/Mobile****True I.Q.
Trunking
SDS-200****HRO Price:
\$699.99**

- True I/Q™ receiver.
- TrunkTracker X.
- Direct ethernet connectivity for streaming and control.
- Complete USA / Canada radio database.
- Location control for simple operation.
- External speaker jack.

- Auxiliary USB type A jack for future expansion.
- 3.5" customizable color display.
- GPS connectivity for simple mobile operation.
- Recording, playback, and replay.
- PC programming & control.

**WiFi Remote + Trunk Tracker V
BCD-536HP****HRO Price: \$599.95**

- APCO 25 Phase I / II.
- Motorola, EDACS, LTR trunking.
- HomePatrol operation.
- WiFi link for remote operation.
- USA / Canada database.
- Zip Code selection.
- Fire tone-out alert.
- Temporary avoid.
- CloseCall® RF capture.
- System channel / number tagging.
- DCS / CTCSS rapid decode.
- Audio AGC.

- S.A.M.E weather alert.
- Backlit keypad & LCD.
- 4 GB memory.
- Enhanced dynamic memory.
- USB connectivity.
- PC programming/cloning.
- Covers 25-512, 758-824, 849-869, 894-960, 1240-1300 Mhz.
- Includes antenna, DC adapter, USB cable, three wire harness, mounting bracket and hardware.

**GPS Support & APCO-25
BCD-996P2****HRO Price: \$449.95**

- 25,000 dynamically allocated channels.
- Location-based scanning.
- TrunkTracker V.
- APCO 25 Phase I & II.
- Links to optional GPS.
- Dual color display.
- Multi-site trunking support.
- Temporary lockout.

- Dangerous crossing or road and POI alert.
- DIN-E mounting.
- Close-Call™ RF capture technology.
- Public safety scanner.
- FREE downloadable programming software.
- USB connector.

Handheld**Trunking
BCD-436HP****HRO Price:
\$499.99**

- APCO 25 Phase I / II.
- Easy HomePatrol operation.
- 4 GB memory.
- USB connectivity.
- CloseCall® RF capture.
- Audio AGC.
- S.A.M.E weather alert.
- Backlit keypad & LCD.

- Includes antenna, USB adapter, 3AA NiMH batteries, hand strap, SMA-BNC ant adapter.
- Motorola, EDACS, LTR trunking
- USA/Canada radio database pre-programmed.
- Enhanced dynamic memory.
- System channel / number tagging.
- DCS/CTCSS rapid decode.
- PC programming and cloning.
- Covers 25-512, 758-824, 849-869, 894-960, 1240-1300 MHZ.

**I/Q Scanner
With SDR Technology****SDS-100****HRO Price:
\$649.99**

Uniden has created the first scanner to incorporate Software Defined Radio (SDR) technology. The SDS100's digital performance is better than any other scanner in both simulcast and weak-signal environments.

This is the first scanner that allows you to decide what to display, where, and in what color. Custom fields put the information important to you right where you need it.

Of course, the SDS-100 also includes all the advanced features you've come to expect from a Uniden scanner: Trunktracker X, weather alerts, APCO P-25 Phase I and II, location-based scanning, and USA / Canada radio database. It meets JIS4 (IPX4) standards for water resistance. This is a do-all, take-anywhere scanner.

Portable**Touch Screen
Programming
HOME PATROL II**

- Digital touch screen.
- USA & Canada database.
- APCO P-25 Phase I & II.
- USB-source charging.
- No subscription.
- Simple programming by entering your Zip Code.

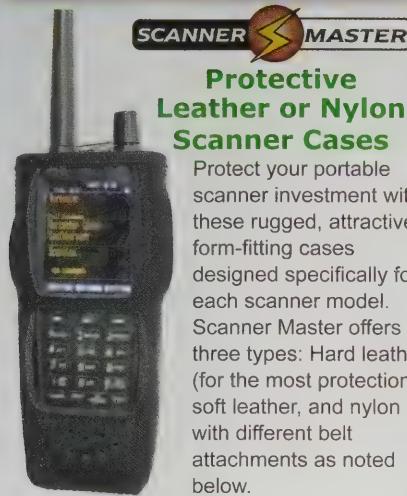


Great for monitoring public safety, local government, amateur radio operators, and more.

**HRO Price:
\$699.95**

SCANNER ACCESSORIES/SHORTWAVE

Carrying Cases



Protective Leather or Nylon Scanner Cases

Protect your portable scanner investment with these rugged, attractive, form-fitting cases designed specifically for each scanner model. Scanner Master offers three types: Hard leather (for the most protection), soft leather, and nylon with different belt attachments as noted below.

Bearcat SDS-100

With swivel belt clips for professional swivel and quick release.

- Hard Leather Case: HRO Price: \$39.95
- Soft Leather Case: HRO Price: \$39.95
- Nylon Case: HRO Price: \$29.95

Bearcat BCD-436HP

With swivel belt clips for professional swivel and quick release.

- Hard Leather Case: HRO Price: \$39.95
- Soft Leather Case: HRO Price: \$39.95
- Nylon Case: HRO Price: \$29.95

Bearcat BCD-325P2

Bearcat BC-125AT

Bearcat BC-75XLT

-Hard Leather Case (Fixed Belt Clip): HRO Price: \$39.95

-Soft Leather Case (Swivel Belt Loop): HRO Price: \$39.95

-Nylon Case (Fixed Belt Loop): HRO Price: \$29.95

Whistler WS-1040

Radio Shack Pro-106

Radio Shack Pro-651

-Hard Leather Case (Fixed Belt Clip): HRO Price: \$49.95

-Soft Leather Case (Swivel Belt Loop): HRO Price: \$39.95

-Nylon Case (Fixed Belt Loop): HRO Price: \$29.95

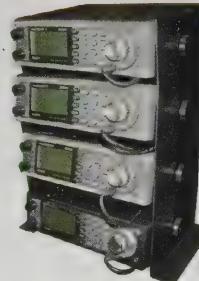
Tunable Loop Antenna AN-200

Use with external antenna capable radios. Plug into the antenna input of your radio or place loop as close to the sound system as possible for better reception. 512-1.5 kHz. HRO Price: \$24.95



Desk Mounts

- Radios Not Included -



DESK-MT BASE-4

Desk mount for four base scanners. HRO Price: \$79.95



DESK-MT BASE-3

Desk mount for three base scanners. HRO Price: \$69.95



DESK-MT BASE-2

Desk mount for two base scanners. HRO Price: \$59.95

DESK-MT PORT-3 PORT-2 PORT-1

Desk mount for one, two, or three portable scanners. HRO Price: \$59.95
HRO Price: \$49.95
HRO Price: \$39.95



Software

BuTel

Scanner Programming Software

Scanner Master is the US distributor of the very popular BuTel line of scanner software. With BuTel software you can remotely program your scanner through its easy-to-use 'Basic' software interface which includes a powerful Radio-Reference.com direct download feature (Radio Reference user account required).

The BuTel 'Pro' software also includes full virtual control, audio recording and data logging.

Bearcat

BCD-325P2, 396XT, 996P2/XT, 15X

- ARCT Basic: HRO Price: \$39.95
- ARCT Pro: HRO Price: \$69.95

Bearcat

SDS-100, SDS-200, BCD-436HP/536HP

- ARC536 Basic: HRO Price: \$39.95
- ARC536 Pro: HRO Price: \$69.95

Whistler

WS-1040, WS-1065, GRE PSR-500/600, RS Pro-106/197, RS Pro-651/652

- ARC500 Basic: HRO Price: \$34.95
- ARC500 Pro: HRO Price: \$69.95

Shortwave

C.CRANE

AM/FM/SW/ WX/Aviation/SSB CC SkyWave SSB

HRO Price: \$149.95



You can now listen to Hams, long range aviation (commercial and military), maritime, space and even spy transmissions from all over the world. Single Side Band is an efficient and reliable way to get long range information without Internet or satellite and it's not available on your smartphone. Ham radio operators play a critical part in emergencies when virtually all normal communication is down.

ENGINEERING EXCELLENCE



\$399.99

Elite 750

- AM/FM/LW/SW bands
- Aircraft Band
- Set 9/10 KHz AM tuning; set FM tuning range
- Single-Side Band (SSB)
- 360 degree rotate AM antenna
- Auto/Manual/Direct frequency key-in and station memory tuning
- Auto Tuning Storage function (ATS) for FM/AM/Shortwave
- 1000 station memories (each band 100 memories, 500 customizable)
- Dual alarm clock function
- Line in socket (can be used as speaker for MP3)
- Line out socket (radio broadcasting can be transferred to other device)
- External antenna jacks for both AM/FM
- Power source: DC input (6V) power supply included



\$129.99

\$29.99



\$149.99

Elite Field

- AM/FM/SW bands
- FM with RDS (Radio Data System)
- Dial-in/dial coarse/ narrow digital tuning
- Treble/bass control
- RF gain control
- Wide/narrow bandwidth selection
- 50 memory stations
- Bluetooth® ready
- External AM/FM/SW antenna connections
- Local/DX switch
- Rich orange LCD display
- Line-in/line-out and headphone jacks
- FM telescopic antenna
- Carrying strap
- Reset/lock button
- Power supply: Included 7V DC adapter or 4 D batteries (sold separately)
- Custom vegan leather Carry Case (sold separately)

Elite Executive

- AM/FM/LW/SW bands
- FM with RDS (Radio Data System)
- Single sideband (SSB) with +/1 kHz tuning
- VHF Aircraft band
- Automatic or Manual Digital Tuning
- FM stereo/mono selection
- Electronic/volume/treble/bass control
- Sync detector with selectable sideband
- Direct key-in meter band for SW
- 700 memory stations
- PLL synthesized dual conversion receiver
- Local/DX switch
- Local/world time zones
- Clock/Alarm/Sleep Timer with time backup
- Rich orange LCD display
- Reset/Lock button
- FM telescopic antenna
- Power supply: Included AC adapter or 4 AA batteries (sold separately)
- Custom vegan leather case with craftsman stitching

eton



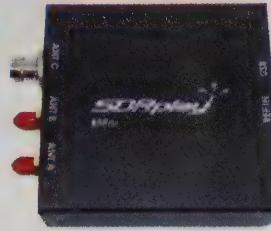
Single SMA Input

RSP1A

HRO Price: \$149.95

The RSP1A is a powerful wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz. All it needs is a PC and an antenna to provide excellent communications receiver functionality. Combined with the power of readily available SDR software, such as SDRUno, you can monitor up to 10 MHz of spectrum at a time. Other SDR software is available for most OS platforms (including Linux, Mac, Raspberry Pi). Third party software is also available to allow reception of various digital modes or to implement panadapter functionality for any CAT controllable rig.

- Continuous coverage from 1 kHz to 2 GHz
- Up to 10 MHz visible bandwidth.
- Powers over the USB cable with a simple type B socket.
- 14-bit ADC silicon technology (not another 8 bit dongle!).
- 11 high-selectivity, built in front-end pre-selection filters.
- Software selectable AM/FM and DAB broadcast band notch filters.
- Software selectable multi-level low noise preamplifier.
- Bias-T power supply for powering antenna-mounted LNA.
- RF shielding layer inside case.
- SDRUno: world class Windows SDR software available as FREE download.
- Documented API for new apps development.
- Single SMA antenna socket covering entire frequency range.



Three Antenna Ports

RSPdx

HRO Price: \$149.95

The RSPdx is a major upgrade to the popular RSP2 and RSP2pro multi-antenna receiver design. It's a wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz. Combined with the power of readily available SDR receiver software (including SDRUno supplied by SDRplay) you can monitor up to 10 MHz spectrum at a time. The RSPdx provides three software-selectable antenna inputs, and an external clock input.

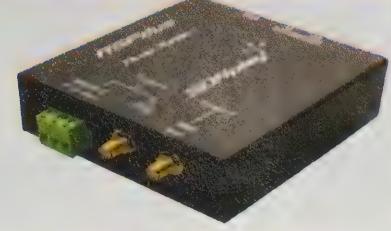
You get all the benefits of the RSP1A plus...

- Additional design optimization for demanding reception conditions below 2 MHz.
- Software selectable choice of 3 antenna ports (2 x SMA and 1 x BNC).
- Enhanced ability to cope with extremely strong signals.
- External clock input for synchronization purposes, or connection to GPS reference clock for extra frequency accuracy.
- Excellent dynamic range for challenging reception conditions.
- Calibrated S meter/ RF power and SNR measurement with SDRUno.
- Enclosed in a rugged black painted steel case.

SDRUno Software

Windows-based SDRUno is provided free of charge and includes:

- Highly integrated, native support for the RSP family.
- Diversity tuning with the RSPduo.
- A fully integrated frequency scanner for all RSPs.
- Calibrated S-meter including support for IARU S-meter standard for all RSPs.
- Calibrated RF power meter with excess of 100 db of usable range for all RSPs.



3 Ports & Dual Tuners

SDRduo

HRO Price: \$279.95

The SDRplay RSPduo is a dual-tuner wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz, giving 10 MHz of spectrum visibility. Combined with SDRUno software for Windows, you can simultaneously monitor two completely separate 2 MHz bands of spectrum anywhere between 1 kHz and 2 GHz. The RSPduo provides three software selectable antenna inputs and clocking features ideally suited to industrial, scientific and educational applications. All it needs is a PC and an antenna to provide excellent communications receiver functionality. A documented API allows developers to create new demodulators or applications around the platform.

- Dual tuners provide independent coverage 1 kHz to 2 Hz using 2 antenna ports simultaneously.
- 14-bit ADC silicon technology (not another 8 bit dongle!).
- Up to 10 MHz visible bandwidth (single tuner mode) or 2 slices of 2 MHz spectrum (dual tuner mode).
- 3 software-selectable antenna ports (2 x 50 ohms and 1 x 1k ohms high impedance balanced/unbalanced input).
- High impedance antenna port (1 kHz to 30 MHz) with selectable MW notch filter and choice of 2 pre-selection filters.
- Software selectable AM / FM and DAB broadcast band notch filters for the two SMA antenna (1 kHz to 2 GHz) ports.
- External clock input and output enables easy synchronization to multiple RSPs or external reference clock.
- Powers over the USB cable with a type B socket.
- 11 high-selectivity, built in front-end preselection.
- Filters on both the 2 SMA antenna ports.
- Software selectable multi-level low noise preamplifier.
- Bias -T power supply for powering antenna-mounted LNA.
- Enclosed in a rugged black painted steel case.
- SDRUno: World class SDR Windows software FREE to download.
- Open API for new apps development.

Latest SDRUno Version 1.4 Now Available

The latest SDRUno software (Version 1.4) includes a Plugin system and a range of plugins is now available, including a Dxcluster plugin which displays DX cluster callsigns on the SDRUno spectrum display. A DX cluster is a network of computers, each running a software package dedicated to gathering, and disseminating, information on amateur radio DX activities. With this plugin you can overlay the DX cluster callsigns as they pop up. There's a choice of how long you let them display and you can control the way in which they appear. Get the latest news on SDRUno plugins by going to:

<https://www.sdrplay.com/plugins/>

HOW-TO VIDEOS,
SOFTWARE, AND MORE
ALL AVAILABLE FROM
<https://sdrplay.com/applications-catalogue>

MMDVM/PACKET/DATA/APRS



Multi-Mode Hotspot

Touchscreen

ZUMSPOT NEXTION 3.5



The ZUMspot NEXTION 3.5 is an advanced radio module board. Paired with a Raspberry Pi and the MMDVM software it becomes a small and efficient multi-mode digital hotspot.

- High performance 32-bit ARM processor.
- Supports DMR, P-25, D-Star, System Fusion, NXDN and POCSAG.
- Onboard LEDs to show status (Tx, Rx, PTT, Mode).
- Up to 10 mW RF power.
- SMA antenna connector, UHF antenna included.
- Mounted on Raspberry Pi Zero WH.
- The firmware is pre-loaded and is easily upgraded via software.
- Built-in 3.5" Nextion display.
- 2.4 A power supply included.
- 1 Year Warranty.
- Open source firmware (MMDVM) and board design.
- ZUMspot board fully assembled and tested.

HRO Price: \$219.95

Small Form Factor ZUMSPOT OLED1.3



Similar to the ZUMspot NEXTION 3.5 but without touchscreen and in a smaller form factor. Power supply and custom case available.

HRO Price: \$159.95

Plugs into USB ZUMSPOT-USB



Connected to a Windows/Mac/Linux computer and MMDVM/BlueDV software makes a small and efficient multi-mode digital hotspot. Great for travel, hotels, mobile computing. HRO Price: \$119.95

Farallon Electronics

Data Modem



PACTOR-4 DR-7400

HRO Price:
\$1628.95

The DR-7400 offers a lower priced entry to the P4dragon modem class. The DR-7400 has been optimized for use with the new high-end data transmission mode PACTOR-4. The DR-7400 is software compatible to the PTC-II series and to the DR-7800 so that existing PACTOR software (AirMail, RMS Express, Alpha etc) can continue to be used. Due to the plug compatibility of the radio ports, a change from the tried and tested PTC-II technology to the innovative P4 dragon technology is very easy. Change over the plugs, turn on, and enjoy PACTOR-4!

- The DR-7400 has many of the features of the DR-7800 but a lower price.
- Backwards compatible to PACTOR-1/2/3. Automatic negotiation during link setup.
- Noticeably improved reception with PACTOR-2 and PACTOR-3.
- Operating Modes: PACTOR-4, PACTOR-3, PACTOR-2, PACTOR-1, weather-FAX (receive), GPS / RTTY / NAVTEX decoder.

Data Modem



PACTOR-4 DR-7800

HRO Price:
\$1848.95

The DR-7800 P4dragon is the no compromise further development of the legendary PTC-II, which was designed for professional use and for the ambitious amateur radio enthusiast. The DR-7800 has been optimized for use with the new high-end data transmission mode PACTOR-4.

The DR-7800 is software compatible to the PTC-II series so that existing PACTOR software (AirMail, RMS Express, Alpha etc.) can continue to be used.

- Operating Modes: PACTOR-4, PACTOR-3, PACTOR-2, PACTOR-1, weather-FAX (Receive), GPS decoder.
- Display: 256 x 64 pixel OLED, blue, high contrast, excellent readability, no viewing angle problems, display of spectrum and much more.

PACTOR-4 Features

- Max net speed 10500 bps.
- 1.5-3x faster than P3.
- Backwards compatible.
- 2400 Hz bandwidth.
- Highly adaptive.
- Highly resistant to interference.
- 6 auto notches.
- Adaptive equalizer.

Farallon Cables/Accessories

Model	Description	HRO Price
Miscellaneous		
9001	6' power cable	\$17.95
8120	1200 baud packet cable	\$49.95
8050	9600 baud packet cable	\$49.95
Control Cables		
8080	Modem to Kenwood or Yaesu radio, SCS 13pin DIN to DB9 female	\$39.95
8081	Modem to Icom radio, SCS 13pin DIN to 3.5mm mini phone plug	\$39.95
8083	Modem to Icom or SGC radio, SCS 13pin DIN to male DB9, 5"	\$39.95
8130	Modem to Yaesu radio, SCS 13pin DIN to 8pin mini-DIN, 2m	\$39.95
Audio Cables		
8050	Modem to Yaesu radio, SCS 5pin DIN to 6pin mini DIN 9600 baud	\$49.95
8120	Modem to Yaesu radio, SCS 8pin DIN to Yaesu 6pin mini-DIN, 2m	\$49.95
8123	Modem to Yaesu radio, SCS 8pin DIN to Yaesu 5pin DIN, 2m	\$49.95
8125	Modem to Yaesu radio, SCS 5pin DIN to 1/8" stereo phone plug	\$49.95
8127	Modem to Yaesu FT-847 radio, SCS 5pin DIN to 1/8" stereo phone plug	\$49.95
9090	Modem to Icom radio, SCS 8pin DIN to Icom 8pin DIN, 1.5m	\$49.95
9095	Modem to Icom radio, SCS 8pin DIN to Icom 13pin DIN, 1.5m	\$49.95
9096	Modem to Kenwood radio, SCS 8pin DIN to Kenwood 13pin DIN	\$49.95
9097	Modem to Kenwood radio, SCS 8pin DIN to Kenwood 13pin DIN	\$49.95

Kantronics



TNC's

**Multi-Mode
DSP Controller
KAM XL™**HRO Price:
\$409.95

Kantronics' third generation multi-mode TNC is a state of the art design for operations on HF, VHF and UHF while supporting DSP modems and popular new modes of operation. The unit provides modes of Packet 300, 1200 or 9600 baud, G-TOR, Pactor 1, AMTOR ARQ, PSK31, RTTY, NAVTEX/AMTEX, ASCII, WEFAX and CW. It has a dual port mailbox and remote SYSOP access. It is GPS NMEA-0183 compatible and provides Kantronics Host Mode and KISS.

**VHF/UHF TNC
KPC-3 Plus
512K USB**HRO Price:
\$199.95

This compact, low current TNC has become the work horse of packet radio today. It features multiple packet connects, digipeating for APRS® operations, WEFAX reception, a GPS mode for tracking, personal packet mailbox. Also available with RS232 interface for \$259.95.

**Dual-Speed
Dual-Port TNC
KPC-9612XE
USB**HRO Price:
\$414.95

This is the rapid delivery model, supporting 9600 baud. It features both 1200 and 9600 packet ports, advanced APRS® digipeating (APRS® is a trademark of Bob Bruninga), (K-Net) net-working, amateur beeper (paging), the ability to download EMWIN weather broadcasts. Also available with RS232 interface for \$469.95.

**Premier
Ham Radio
Software
Suite
HRD****RIG CONTROL**

Organize buttons, sliders, and drop-downs to toggle radio options, select modes and filter settings, and control level inputs via your computer screen.

LOGBOOK

A complete DX operations center, Logbook is the ideal shack accessory for everyone. Keep track of all important contact information with the click of a mouse.

DIGITAL MODES

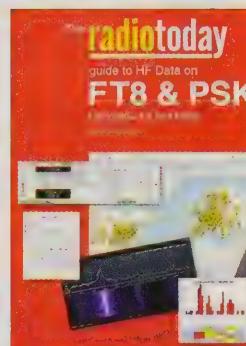
DM-780 is capable of digital modes, including CW, RTTY, SSTV, PSK31, MT-63, and more. Digital Master interfaces with the popular KIEL WinKeyer.

**HAM RADIO DELUXE SOFTWARE
The Radio Amateur's Best Asset**www.HamRadioDeluxe.com**SATELLITE TRACKING**

Take the guesswork out of satellite operations using the latest orbital mechanics equation and up-to-the-minute Keplerian element information.

ROTATOR CONTROL

Integrating with Logbook and Satellite Tracking, Rotator Control manages beam headings via any computer interfaced rotator controller.

Support:<https://support.Ham-Radio-Deluxe.com>**Forums:**<https://forums.Ham-Radio-Deluxe.com>**CD version - HRO Price: \$119.95****USB flash drive - HRO Price: \$124.95****HF DIGITAL MODE BOOKS****Radio Today
Guide To HF Data
on FT8 & PSK**HRO Price:
\$15.95

Many radio amateurs who are finding the bands quiet are now turning to HF data on FT8 and PSK and finding lots of activity when using the weak signal modes offered by

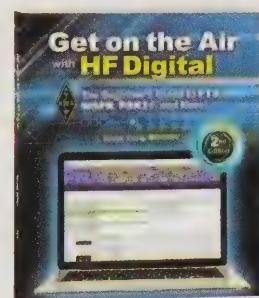
WSJT-X. There has been an explosion in the popularity of these modes and this new book simply and easily explains how you can set up a modern digital modes station using just a PC and a transceiver. Detailed and practical discussions explain the monitoring and operating procedures required. Also practical hints and tips for a seasoned user.

- Covers WSJT-X 2.0 software including FT8 contest modes for weak signals.
- Includes the Fldigi 4.0 freeware for the myriad of other HF digital modes available.
- Covers the new Fox and Hounds mode.
- Discusses concepts such as Forward Error Correction (FEC), Cyclic Redundancy Checks (CRC), and Fourier analysis in a simplified way using diagrams and terms familiar to most radio amateurs. #3001

**Step By Step
Get On The Air
With HF Digital**HRO Price:
\$19.95**2nd Edition**

Explore digital radio below 30 MHz! Here is a step-by-step guide that'll get you started.

Written in an easy to understand, conversational style, this book will show you how to set up and operate your own HF digital station.

**Let's Build an HF Digital Station**

Exploring the three essential components of your station: a radio, a computer and a device that ties them together.

PSK31, RTTY and JT65

Hands-on instructions to get started with the three most popular HF digital operating modes today.

MFSK and Olivia

With these two modes you'll still be chatting long after the bands have supposedly gone "dead".

PACTOR

PACTOR is a great way to get your message through error free, Plus articles from the pages of QST magazine! #0833

RIG/PC CONNECTION

WEST MOUNTAIN RADIO



A RIGblaster is the easiest way to connect your radio to your computer to operate PSK31, RTTY, WinMOR, Olivia, Packet and more! Chase DX easily using advanced JT65-A! Unrivaled simplicity, True FSK, True-keyed CW & CAT/CI-V control – see why these are the World's Finest Digital Mode Interfaces! Includes DVD with more than 100 popular software programs. All RIGblasters are ground isolated and RF filtered. Supplied with all the cables you need to get on the air. These models work with more than 2000 radio models. Kits are available for 4-pin round or RJ22 connectors.



Dual Sound Cards RIGBLASTER DXpro

HRO Price:
\$299.95

RIGblaster DXpro is a thoroughly modern sound card interface designed for the 21st century. Combining dual sound cards and advanced software-controlled features, the DXpro will empower your station whether your interests are chasing DX with weak-signal modes, RTTY and SSB contesting, or operating remotely over the internet. Works with all sound-card based digital mode programs and logging software. #58001-1809

DXpro Accessories:

DXkey Remote #58001-1809 - HRO Price: \$19.95

DXpro AC Control Kit #58142-1820 - HRO Price: \$65.95



Bluetooth RIGBLASTER BLUE

HRO Price:
\$219.95

The West Mountain Radio RIGblaster Blue is a completely integrated Bluetooth wireless interface. Use a Bluetooth headset with your radio. Provides safe, secure hands-free operation. VOX PTT is available in the headset mode. Pair with any compatible laptop or tablet for mobile operation. Use with Yaesu, Kenwood, Icom, Ten-Tec and Elecraft radios. Pairing radio to any compatible smartphone or tablet provides for mobile rig control of digital modes. (Compatible software is required.) Perfect for mixed mode nets plus PSK31, RTTY, WinMOR and Packet. Operate using over 100 popular ham radio sound cards (optional). #58013-1502



Fully Isolated RIGBLASTER ADVANTAGE

HRO Price:
\$204.95

The only RIGblaster with a built-in soundcard. It works with any radio using one USB cable to connect to PC. Built-in CAT or CI-V rig control interface. Mic input with PTT override and interrupt. Front panel transmit and receive audio and VOX delay controls. Fully isolated CW / FSK output for keyboard CW and RTTY. Includes (1) 3-ft 8-pin mic cable, (1) 6-ft 1/8" audio cable, USB cable, software programs DVD, and accessory kit. #58012-1288

Simple Install RIGBLASTER PLUG & PLAY

HRO Price: \$124.95



Simple USB Plug and Play installation. One plug to the radio and one USB connection to the computer. Built in USB to serial converter for PTT, CW and CAT or CI-V rig control. USB powered, no additional power needed. Compact: great for mobile or QRP operation. Fully isolated CW keying output for direct keying of your rig's CW. Includes: radio specific 8-ft data jack adapter cable, 12" computer audio and USB cables and software programs DVD. #58009-963

Compact RIGBLASTER NOMIC

HRO Price: \$69.95



The RIGblaster Nomic is a small, simple, rugged and inexpensive sound card interface, perfect for Echolink®, portable, or field setups. Supplied with both a standard DB9 RS232 serial cable and USB cable interface (supported for Mac (OS9,10), Linux, Windows (98SE – Vista 32 and 64 bit)! May be used with old or new computers with your choice of USB or RS232 DB9 serial. No external power supply necessary so it is great for portable or QRP operation. Simple and inexpensive choice for a dedicated Internet link with the EchoLink® System. Includes the following: 3' 8-pin round circular mic cable, 3' RJ45 mic cable, USB to RS232 male adapter, 6' DB9M to DB9F serial cable, (2) 6' 1/8" audio cables, owner's manual, software programs DVD, and accessory kit. #58008-959

RIGblaster Plug & Play - Radio Versions

Model	Description	HRO Price
58011-962	RIGblaster Plug & Play Icom 8pin ACC1	\$124.95
58011-963	RIGblaster Plug & Play Icom 13pin DIN	\$124.95
58011-964	RIGblaster Plug & Play YIK 6pin mini-DIN	\$119.95
58011-965	RIGblaster Plug & Play Kenwood ACC 13pin DIN	\$124.95

RIGblaster Accessory Cables

Model	Description	HRO Price
58107-971	Rig Control Cable for Icom CI-V Radios	\$9.95
58108-972	Rig Control Cable for Yaesu mini-DIN-8	\$10.95
58108-974	Rig Control Cable for Yaesu DIN-6	\$10.95
58120-984	CW Cable Kit for RIGblaster Plus II, Plus, Plug & Play 6 ft	\$9.95



Radio Setup The Easy Way!

Set Up All the Features... Not Just the Memories with
RT Systems Programming Software and Cables !

HRO Can Now Supply Radio Programming Software* for Any Radio Model that RT Systems Supports, Including Radios From:

Alinco

Abbree • Anysecu

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Baojie • BTech

Hesenate • HYS • Icom • JetStream

Jimtom • Jingtong • Juentai

Kenwood • Leixen • Luiton

Midland • Pofung • Powerwerx

Puxing • Quansheng • QYT

Radioddity • Retevis

RuggedRadio • SainSonic

Socotran • Talkpod

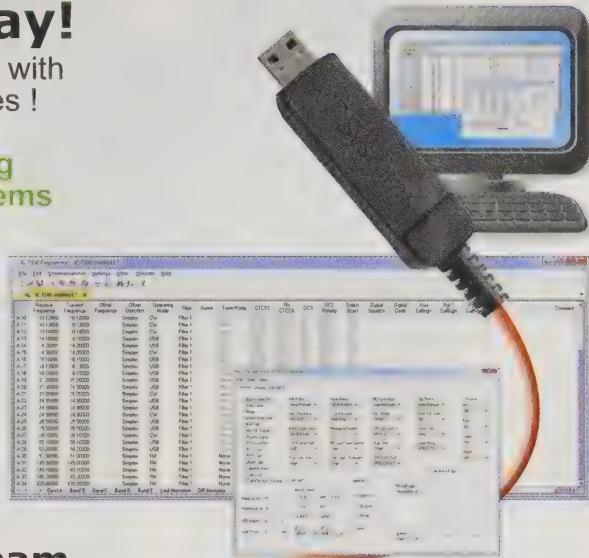
TDXOne • Tera • TIDradio

Tokmate • Tonfa • TYT

VGC • WLN • Wouxun

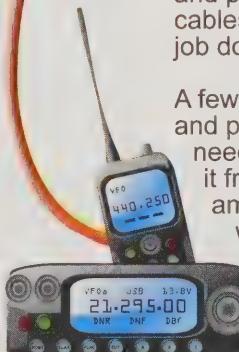
Yaesu • Zastone

"Always Believe You Can!"



The Programming System that Works!

"I have a QYT radio that I'd been trying to program for two and a half years. Downloads from YouTube and purchasing three different cables with disks did not get the job done.



A few days ago I tried the cable and program from RT Systems. I needed just a little help and got it from your support guys. Now I am happy to say, the little radio works fine. Thank you for your product and your help."

- Bob,
Newfoundland Canada

*Each programmer is unique to a specific radio.

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RADIO REMOTE CONTROL

REMOTERIG

The Ultimate In Remote Control



Now With Dual
"Stereo" Receiver
& Includes 12V
Power Supply



An example of
CW with remote
controlled radio!

Complete Set RRC-1258-MKII-S-Set

HRO Price: \$489.95

The Remoterig RRC-1258-MkII-S-Set was developed to control amateur radio stations remotely via the Internet in a user friendly and cost-effective manner.

Remoterig units are used in pairs; one unit is connected to the radio, and the other to the control equipment. The system is unique in that no PC is needed; both voice and data communications are handled by the two units.

The RRC-1258-MkII-S-Set can be configured to work with almost all ham equipment currently available from Icom, Kenwood, Yaesu, and Elecraft. Remoterigs are especially useful in situations where you are (1) not allowed to install antennas at your home location, (2) the noise level is so high that a normal signal exchange is not discernible, (3) you want to build an antenna system too large for your local urban area, or (4) you do not want to be dependent upon a PC for the remote control.

The ultimate functionality of the Remoterig RRC-1258-MkII-S-Set can be experienced when the system is used with radios having detachable front panels such as the Kenwood TS-480, TS-2000, or Icom IC-706 series. Simply replace the cable between the control panel and the radio with the Remoterig system. The Yaesu Twin version and Elecraft K3 Twin versions are available.

The system also works very well with more traditional remote control situations from PC-based control software, like Ham Radio Deluxe; the Remoterig boxes solve the voice and data problems, but you do need a PC for the control software itself in this particular setup.

The Remoterig system itself will not introduce any latencies, and those introduced by the Internet will rarely be a noticeable problem. The Remoterig system also includes a unique solution for operating CW over the Internet with, among other things, a built-in CW keyer that uses a standard 3.5 mm stereo plug.

The Remoterig RRC-1258-MkII-S-Set is connected to the Internet primarily via 10 or 100 Mbit Ethernet cable, and fixed connections like DSL, cable, or WLAN. 3G based mobile solutions will also work, although occasionally with reduced performance.

The system is portable and can be used from almost any network connection in the world. Session initiation, audio (VoIP), and data are transferred using standardized protocols like SIP, RTP, etc., where you can select different audio qualities depending on available bandwidth. The Remoterig system is easily configured via modern USB and WEB based user interfaces. Stereo (dual receiver) works only with radios with dual receivers.

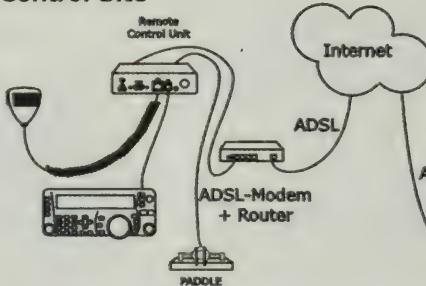
CW KEYER

A CW keyer has been implemented in the RRC-1285S-MkII-S-Set software to make CW operation possible, even with longer Internet latencies and jitter. During normal operation we depend on the radio's sidetone for CW, so the problem of Internet latency is solved by the sidetone being generated locally in the Remoterig box. Remoterig automatically mutes the sidetone generated by the radio for x number of ms after the dot or dash is sent; the delay can be adjusted depending on the latency.

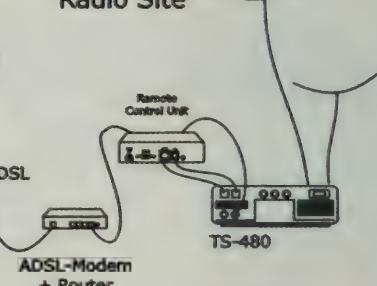
The CW-handler is a kind of adjustable "jitterbuffer" for the CW keyer at the radio end. If the latency of your Internet connection is not constant, the delay (in ms) can be set before the radio is keyed. The CW keyer reconstructs the transmission on the fly before it is sent; a system that is much more tolerant of varying latencies (jitter). Lengthier delay settings may provide higher tolerance against jitter, but will also effectively delay the transmitted CW signal.

Example: Remote Control of Kenwood TS-480

Control Site



Radio Site



As an example, the diagram shows a TS-480 in use with the RRC-1258-MkII-S-Set. Any of the available radios with detachable front panels, like the IC-706, and TS-2000, will be configured in the same manner. The cable between the front panel and the radio is replaced with two RRC-1258-MkII-S-Set; one connected to the control

panel, and one connected to the radio itself. No PC or laptop is necessary in this case.

When the power button is pressed, the radio on the remote side will start up, and all audio and information from the panel travels via the Internet between the pair of RRC-1258-MkII-S-Set

units – a very similar situation to SIP-based IP telephones. All appearances and functions will be as if the front panel and radio were directly connected. Presently, the TS-480 is the simplest to adapt using one additional cable (optional Kenwood E30-3500-05). Connection cables can also be made using the RJ-45 and RJ-11 connections.

TIMEWAVE TECHNOLOGY

Data Controller



Multi-Mode PK232SC

HRO Price:
\$599.95

With the addition to the PX-232 of a built-in sound card, rig control, computer isolation, and total USB connectivity, the PK-232SC brings a new level of performance with sharp, accurate DSP filters for all its internal data modes and dual transformer isolation for sound card data modes. Weak signals magically appear from the noise and QRM bounces off the new DSP filters for cleaner copy with fewer errors than the old analog filters.

More Filters, Better Filters, Auto Selection
The PK-232SC brickwall filters have tighter bandwidth and steeper skirts for improved noise and QRM rejection. New firmware (version 7.2) allows a wider selection of filters than the original PK-232, so the filter can match the mode. The correct DSP filter is automatically selected when you choose an internal mode. In RTTY, Timewave's proven twin peak filters pluck the mark and space tones from the noise and QRM for great copy. In PACTOR, the filter bandwidth automatically changes when the baud rate shifts in response to the error rate of the link. In Morse (CW), the operator can preset either 100 Hz or 200 Hz bandwidth. The PK-232SC is compatible with all Windows XP, Vista, and Windows 7 software terminal programs for the PK-232.

Sound Card Interface and Rig Control

For maximum flexibility, Sound Card / TNC switching is both software and panel switch controlled; sound card mode selection is software controlled. For example, when operating with Radio Operating Center software, changing to PSK31 from Pactor or MT63 is a simple menu click. The single USB cable from your PC also moves your logic level Kenwood RX / TX / RTS / CTS, Yaesu CAT, and Icom CIV and USB rig control interface to the back panel of your PK-232SC.

All the Proven Modes + All Sound Card Modes

PK-232SC supports all new sound card modes in addition to all of the existing PK-232 modes: Pactor, VHF / HF packet, AMTOR/ SITOR, Baudot, ASCII, Morse, HF Weather FAX, TDM, and NAVTEX.

The PK-232 / PSK comes with a complete cable and connector set in addition to Timewave's on-line and telephone support. As always, you can upgrade any PK-232 ever built to the latest PK-232SC!

- Digital signal processor & 18 DSP filters.
- Twin peak RTTY filters; adaptive PACTOR filters.
- Works with all sound card modes.
- USB sound card audio.
- Rig control for Icom, Yaesu, and Kenwood transceivers.

Radio Control

Plug & Play Remote Control HAMLINK USB™

USB Rig Controller Plus

HRO Price:
\$59.95

**Connect and
control your
transceiver via
USB with Plus
option for T-R
switch, key,
foot switch,
input, or user
I/O.**



The HamLinkUSB™ Rig Controller Plus is a USB to logic level conversion device for CAT / CI-V enabled transceivers that provides PTT output, keying output, or foot switch input options.

The CAT / CI-V feature provides a logic level serial interface which connects directly with non-RS-232 CAT / CI-V inputs on Kenwood, Icom, Yaesu, Ten-Tec, Elecraft and Alinco models. The controller is compatible with most soundcard and software control programs such as PK-Term 3.0.

HamLinkUSB Optional Cable Assemblies

HLUSB-CIV CI-V - Icom, Ten-Tec, Elecraft.

HRO Price: \$8.95

HLUSB-CAT MiniDIN-8 cable assembly for Yaesu FT-857 / 817/ 100 / 100D

HRO Price: \$13.95

HLUSB-4CON 4 conductor with 3.5 mm plug to open end cable.

HRO Price: \$13.95

Noise Reduction



Cancel Noise ANC-4

HRO Price:
\$189.95

The ANC-4 RF device eliminates or reduces power line noise, computer noise, TV generated interference, and other types of electrical noise. Attach the unit directly to the antenna connector of the receiver or transceiver to cancel locally generated noise before it affects the receiver AGC circuits. Reception of signals well below the noise level of the local interference is possible.

To cancel locally generated interference, the ANC-4 detects the interfering signal and adjusts its phase and magnitude so that it matches the offending interference at the receiver input, but is 180 degrees out of phase. Front panel controls allow adjustment of both phase and magnitude.

Connect the ANC-4 between the main station antenna and the receiver antenna connector. A second antenna connects to the ANC-4 to pick up noise. A short wire antenna or short collapsible whip is generally satisfactory for eliminating noises generated around the operating position or in the house, but an external antenna works better to eliminate noises generated outside the home. Any noise antenna that works, including combinations of horizontal and vertically polarized antennas, is satisfactory.

The ANC-4 operates as an active antenna by using the noise antenna and the NOISE GAIN control to amplify the antenna output. The unit can also be used as a diversity combiner to peak weak signals or null interfering signals.

Sound Card Modem



USB Audio NAVIGATOR

HRO Price:
\$374.95

The Navigator USB sound card modem has a proven USB audio sound chip, six FTDI USB serial COM ports, a K1EL WinKey keyer, true FSK and rig control connections for every radio. A built-in USB sound card with isolated audio I/O to your radio prevents ground loops. A second audio input lets you use both receivers in a dual receiver radio. The logic level and RS-232 rig control ports support your Icom CI-V, Yaesu CAT, Kenwood and other radios. Front panel controls set both RX audio levels, TX audio out-put level, audio monitor level, and the CW speed.

**For more information
about Timewave
Technology products
contact your local
Ham Radio Outlet
for assistance.**

DIGITAL/ANALOG AUDIO

Tigertronics™
Grants Pass, Oregon

Sound Card Modem



USB Sound Card SignalLink™ USB

HRO Price:
\$114.95

The SignalLink™ USB combines the legendary performance of our SL-1+ with a state of the art "built-in" low-noise USB sound card. The unit delivers optimum performance while eliminating the need to attach to your computer's sound card. Convenient front panel controls and simplified installation make the SignalLink™ USB very user-friendly.

Virtually all sound card digital and voice modes are supported including FT8, PSK31, VARA, RTTY, SSTV, CW, and EchoLink®, to name a few. Performance on all modes has been optimized by the use of special low-noise parts and careful design techniques. Front panel controls let you adjust your transmit audio, receive audio, and transmit delay "on the fly."

The SignalLink™ USB works with virtually all radios and can be attached to the mic jack, data port or accessory port (see table below). A wide selection of fully assembled radio cables is available for common base, mobile and hand-held (HT) radios. A special unterminated radio cable is available for radios that use a non-standard connector. The SignalLink™ USB comes fully assembled and tested. No external power required. Power is provided by the USB port.

The SignalLink™ USB comes with all required cabling including a radio cable (specify which radio cable is included using the table below), USB cable, mono cable, plus jumper wires, Allen wrench, software CD, and documentation. Compatible with Windows XP/ME/2000/VISTA/7/8/10, Mac OS9.1 or later, and Linux. FCC certified to comply as a Class B digital device.

- SLUSB4R 4-pin round mic connector
- SLUSB8R 8-pin round mic connector
- SLUSBRJ11 RJ-11 mic connector
- SLUSBRJ45 RJ-45 mic connector
- SLUSBKX3 Elecraft K2 & KX3
- SLUSB5PD 5-pin DIN ACC / Packet
- SLUSB8PD 8-pin DIN ACC
- SLUSB6PM 6-pin mini DIN Data
- SLUSB8PM 8-pin mini DIN ACC / Data
- SLUSBK3 Elecraft K3 (rear panel)
- SLUSB13I Icom 13-pin DIN ACC
- SLUSB13K Kenwood 13-pin DIN ACC
- SLUSBHTW Ken/Baofeng/Wouxun HT
- SLUSBHTY Yaesu HT 4-pin TRRS
- SLUSBVXY Yaesu HT threaded 4-pin

**WEST MOUNTAIN
RADIO**

15 Watt Speaker PWRspkr

HRO Price:
\$75.95



RMS linear power amplifier minimizes distortion at high sound levels. Sharp bandpass

filter with 300 Hz to 3.2 kHz pass band attenuates unneeded bass and treble sounds. Adjustable gain control. Plugs into radio's speaker or headphone jack. Ideal for use in truck or car for improved communication in noisy environment. Power cable fitted with Powerpole® connector. #58406-947

DIY Noise Reduction CLRmodule Clearspeech DSP Noise Reduction Processor



NEW

Noise reduction DIY Board. Simple pin connections provide the ability to connect directly to radio and speakers. The unit is extremely effective in improving communication clarity. QSO's will be more enjoyable without the fatigue of background noise. In many cases, there will be a noticeable improvement in understanding weaker signals, making contacts, and general listening. PC hookup and utility for programming. #58413-1763

HRO Price: \$99.95



Noise Reduction CLRdsp

Speaker and headphone amplifier with Clear Speech® adaptive DSP noise reduction for voice and CW. Recognizes intermittent nature of CW and allows it to pass noise free. Continuously adjustable noise reduction. Contains 11 watt (into 4 ohms) power amplifier. Sturdy aluminum case. Ideal for mobile operation as well as home station. Plugs into the speaker or headphone output on the radio. Powerpoles® plug into any 12V supply. #58407-949 HRO Price: \$199.95



Noise Reduction CLRstereo

Independent DSP noise reduction for main and sub RX or two separate radios. Features flexible audio switching, independent volume, tone, and filtering for both channels, PTT input for fast audio recovery, and dual power option. You can use USB or 12 VDC to power. #58412-1762 HRO PRICE: \$349.95

HRO Price:
\$199.95



Amplified loudspeaker with advanced ClearSpeech® adaptive DSP noise reduction

for voice and CW. Recognizes intermittent nature of CW and allows it to pass noise free. Continuously variable adaptive filter noise reduction. Contains 4in. loudspeaker with 7.5 watts RMS maximum amplifier. Volume control knob for adjustment of internal speaker sound level. Front mounted 1/8 - inch stereo output jack for powered speakers or 16 ohm (or higher) headphones. #58407-948

RF Immune Speakers COMspkr

HRO Price:
\$199.95



Eliminate HAM radio station noise and interference. Replaces any RF interference prone computer speakers easily. Amplified speaker system

optimized for operation in close range of any radio transmitter. Exceptionally high rejection of radio frequency interference from 1 to 1000 MHz. Stereo high fidelity response for use with voice or music. High 3-watts per channel acoustic power output can be heard clearly in noisy environments. Built-in amplifier assures compatibility with most computers and/or two way radios. Powered via USB. #58410-950

MFJ

Noise Canceller



Signal Enhancer MFJ-1026

An adjustable antenna network that combines two antenna signals to give various directional patterns. Null out strong interfering signals or peak weak signals at the push of a button. Use external or built in active noise antenna. Works on all modes from BC to low VHF. Eliminate severe line noise from many sources before it ever gets into your receiver. Can run off 12 VDC or 110 VAC using MFJ-1312D.



Signal Enhancer MFJ-1025

Similar to the MFJ-1026. No active antenna.

Noise Filter



AC Line Filter MFJ-1164

Filters AC Line RFI, surges, noise, transients, and hash ~ 30dB. Four 15 A/120 VAC outlets.

SSB Speech Refined



Intelligibility Enhancer MFJ-616 / MFJ-618

Speech Intelligibility enhancer extraordinaire. An amazing difference in understandability of SSB speech. No hissing, ringing, or other strange effects, making a dramatic improvement. MFJ-618 has separate adjustable channels for each ear.

Speakers/Headphones



Padded Headphones MFJ-392B

MFJ's communication headphones are perfect for amateur radio and shortwave listening. All modes, each earphone with separate volume control. Super padding. 9' cord. Padded headband and comfort cushion ear pads. Mono / stereo adaptor included.



Padded Headphones MFJ-393 K|Y

Professional boom mic / headphones for contesting, DXing, traffic nets. Comfortable padding seals out noise. Frequency tailored mic. Adjustable boom.



Speaker MFJ-281

The MFJ ClearTone™ restores the broadcast quality sound of shortwave listening. Makes copying easier, enhances speech, improves intelligibility, reduces noise, static, hum. 3-inch speaker handles 8 watts. 8 ohm. 6 foot cord.

Microphones



Desktop Mic MFJ-299

Desk microphone, tailored for SSB. Adjustable 11 inch boom. Graphic equalizer, compressor, VU meter, on-air indicator, PTT / lock switch.



Desktop Mic MFJ-297

A basic SSB boom microphone with easy controls and PTT switch.



MIC Control Center MFJ-1263

Microphone control center allows for instant switching of microphones to different transceivers. Use PTT footswitch, headset boom mic, phones, speaker, audio-in jack.

KISS Mode TNC



Universal TNC MFJ-1270X

A universal self-contained KISS mode TNC that works with every packet software program that supports KISS mode. Perfect for APRS. Fully compatible with WinLink 2000. Works with Windows, MAC OS X and Linux. Active audio filter cleans up analog signals. Small, inexpensive, low power consumption, expandable.

MICROPHONES



HM-10XD

The HM-10XD features our new HC-5X and HC-4X elements. The narrow response of the HC-4X is ideal for DX work and the full response of the HC-5X is great for everyday rag chew. It comes equipped with a microphone clip and a foam windscreens. CC-1 adapter required.



HM-12

The high output full range "Genesis" dynamic element in the HM-12 is designed to work with just about every amateur radio low impedance transmitter. The element is mounted in a unique internal shock mount and exhibits nearly -35 dB of rear rejection, reducing background and ambient noise from the transmitted signal. The "soft touch" PTT switch is wired to pins 3 and 4 for transmitter control with the microphone signal fed to pins 1 and 2 of the 4 pin XLR. The Heil HM-12 uses Heil CC-1 connecting cables. This microphone has a unique internal windscreens plus an external foam windscreens. It has the 5/8" X 27 microphone clip designed for our booms and stands. Frequency response: 80 Hz-14 kHz @ -55 dB. Choose a satin or black finish.

PR-77D/PR-77DP

A professional quality dynamic microphone for commercial broadcast, recording, podcasts and any application that requires a smooth flat response over a wide frequency range. Excellent transient response, great speech articulation and low IMD with -40 dB rear rejection. Features a two position switch allowing the selection of the best characteristics for voice or music. Choose purple or black.



PR-781/PR-781G

These professional quality dynamic cardioid microphones for amateur radio provide a wide frequency response, great articulation, and a -40 dB of rear rejection with ample output to drive most amateur radio microphone inputs. The PR-781G is specifically designed for use with most makes of Elite transceivers by Kenwood, Flex, Elecraft, Yaesu, Ten Tec and Icom. The PR-781G is the same great design and performance as the PR-781 but now with a beautiful gold screen. Both models come with the SM-3 mount.



The Fin™

The Fin™ utilizes the PR-20 element so popular in the professional audio realm. It is housed in a gorgeous high-gloss chrome finish. If phantom power (not compatible with Icom transceivers) is provided to The Fin™, the blue wind screen (also available in red or white) becomes illuminated by 4 embedded LEDs. Now also available in satin black with red, white or blue LEDs/foam. CC-1 XLR required.



The Heritage HHG

The Heritage is a dynamic microphone with a vintage chrome look. It utilizes the PR 20 element and has a lockable on/off switch. It is available in chrome or black matte with blue foam windscreens.



HANDI-MICS

The Handi Mic is an ultra-compact hand microphone utilizing a special internal shock mount, yielding superior audio compared to the standard microphones offered by the radio manufacturers. The Handi Mic is available with the "iC" element designed for Icom rigs. A special "Pro" version is also available, with a wide-range dynamic element that sounds great on FM mobile rigs. Both have PTT.

Model Element

HM-iC Electret for most ICOM
HM-PRO Wide Range Dynamic



ICM/ICM BG

A salvation for Icom users. The iCM is a high-quality microphone for early Icom transceivers that comes in an all platinum colored finish or a matte black with gold grill. It features a high-gain condenser element that provides full-bodied audio with plenty of drive to match up with the low-gain audio systems of the earlier Icom rigs. It also works well with the higher-gain "Pro" radios and IC-7800. It comes with an attached, shielded 8' cable terminating in an 8-pin mic plug and a 1/4" PTT pigtail. Available in either black or gold.



HEIL PR30

The PR 30 was designed for commercial broadcast, live sound and recording. It has comparable sound to the finest condenser microphones because of its wide frequency response, excellent transient response and low IMD. The PR 30 comes standard with the SM-3 5/8" X27 mount. All the PR series microphones require a CC-1 XLR cable to interface with your transceiver. Available in black or champagne.



HEIL PR40

The PR 40 was designed for commercial broadcast, live sound and recording. It features the Heil dynamic element with a perfectly flat response from 28 Hz all the way up to 18 kHz and has gorgeous articulation. The PR 40 is shipped with the SM-3 5/8" X27 mount and a padded leatherette carrying case and is available in champagne, chrome, gold, and matte black with gold grill finish. All the PR series microphones require a CC-1 XLR cable to interface with your transceiver.



PR-10 | MIC-PACKAGE

It's small in stature, mighty in performance; the PR 10 combines a desk stand, boom and the latest microphone offering from Heil Sound.

The integrated mic exhibits outstanding speech articulation with perfect balance of highs and lows. Works well on most all transceivers.

Requires a CC-1 XLR series cable to interface with your transceiver. Also available as the PR-10 Red with the LB-1R.



PRO CONNECTOR CABLES

This 8 ft long cable connects The Fin™ and PR Series microphones to your 8-pin Kenwood, Yaesu, or Icom transceiver. Made with Heil-wire to help reduce RFI and noise. Pigtail easily connects to HS-2, FS-2 or FS-3.

CC-1 XLR BAL... FT-950, FTdx9000..... \$39
CC-1 XLR I..... Icom cable \$39
CC-1XLR K..... Kenwood cable \$39

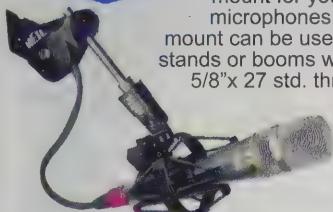
MICROPHONE ACCESSORIES



Shock Mount SM-1

*Microphone not included

The ultimate suspension mount for your Heil hand microphones. This shock mount can be used on all Heil stands or booms with a simple 5/8" x 27 std. thread mount. **HRO Price: \$79.00**



Shock Mount PRSM

This flexible support system helps suppress low frequency rumble by dampening vibrations. The PRSM fits large diameter microphones including the PR 30/40/781 and can be used on all booms or stands with 5/8 threading.



PRSM-B black finish.

PRSM-C champaign finish.

Switches

PTT Hand Switch HS-2

Heil's high quality hand switch made for PTT operation is shaped to fit your hand naturally and comfortably. Comes with a 6 foot cable that plugs into the AD-1 or CC-1 adapter. **HRO Price: \$35**

Single Circuit Foot Switch FS-3

Use the FS-3 to control the transmit function of your amateur radio. A 6-foot shielded cable is terminated with a commercial 1/4" plug that connects into the Heil CC-1 and AD-1 cable system. **HRO Price: \$27**



Dual Foot switch FS-2

This unique dual-action footswitch provides two sequenced micro switches, one for each connection to your transmitter and your linear amplifier; when you press down on the foot switch, the amplifier's switch is engaged first, followed immediately by the switch for the radio, and when you let up the reverse sequencing takes place. This provides safe switching for both radio and amplifier without a control cable between the two units. **HRO Price: \$49**

This unique dual-action footswitch provides two sequenced micro switches, one for each connection to your transmitter and your linear amplifier; when you press down on the foot switch, the amplifier's switch is engaged first, followed immediately by the switch for the radio, and when you let up the reverse sequencing takes place. This provides safe switching for both radio and amplifier without a control cable between the two units. **HRO Price: \$49**

Mounts



Illuminated Base

LB-1R

Red Finish with White Light



Illuminated Base

LB-1B

Black Finish with Blue Light

Heil Sound's fun light up bases have an oversized PTT with the Heil logo and LED lights that can be illuminated in 2 different ways. It has standard 5/8"-27 brass threading to work with any Heil Sound microphone accessories. This weighted base features a high strength plastic covering and great looks.



Classic Base

CB-1 PTT

This beautiful reproduction of a 1930 RCA microphone base has stainless trim and features a PTT with a 4" riser that accepts 5/8" x 27 hardware. **HRO Price: \$79**

Flange Mount FL-2

Basic mount with brass insert. Fits the PL-2T, SB-2, & HB-1. **HRO Price: \$29**



Desktop Flush Mount

DT-1

Allows PL-2T, SB-2 and HB-1 to slip into 1-1/2" hole drilled into the desktop. **HRO Price: \$39**



Vertical Surface Mount DT-1

The WM-1 is a unique mount for the Heil booms that allows them to be mounted on a vertical surface. The brass insert of the WM-1 ensures smooth, perfect fit with PL-2T and HB-1. **HRO Price: \$25**



Booms

Studio Boom

PL-2T

The PL-2T "Topless" boom is a unique articulated boom that lets you tuck your microphone cable away for a professional appearance. It accepts all Heil Sound 5/8" x 27 threaded microphone mounting clips. Includes a C-Clamp. It can support a total weight of 2.5 lbs. **HRO Price: \$109**



Small Boom SB-2

This compact, adjustable boom accepts standard 5/8 x 27 threading and comes with a C-Clamp. It is compatible with all Heil Sound hardware. **HRO Price: \$59**

Economy Mic Boom HB-1



The HB-1 is an articulated boom balanced by four external springs. It is capable of supporting microphones weighing up to 2.5 lbs. and any standard 5/8 x 27 threaded microphone hardware. The HB-1 is shipped with a C-Clamp mount that accepts up to a 1.5" thick cable and is compatible with all Heil Sound hardware. **HRO Price: \$71**

Riser | RS-1

This 12" riser allows you to mount any Heil Sound boom behind your transceiver or console. **HRO Price: \$30**

Wireless Adaptor

Wireless Adaptor | HBA

We bring to you a pair of simple wireless devices one connecting into any of our 3 pin balanced XLR microphones (PR 20, PR 22, PR 781, etc) and the receiver connected to the microphone input of any Heil AD-1 headphone adapter. It has a range of about 40'. The stations you work can not tell that you are using a wireless adapter instead of a wired mic cable. A PTT is required.



HEADSETS



Pro Series



Stereo and Selectable Elements PRO-7

The Pro 7 features an audio balance control allowing the user to adjust levels between speakers. It also features the Heil Sound Phase Reversal Switch, which allows the user to "move" the incoming signal to significantly improve copy in a tough DX pile up. The mic boom can be rotated for use on either the right or left ear. The Pro 7 is available in black, red, or blue. Outfitted with the HC-7 dynamic element or the iC electret element, the HC 74 Element for DX is available separately. Compatible with current AD-1 series adapter cables.



Professional and Lightweight PRO SET 3

Pro Set 3 stereo headphones are professional and lightweight designed for music recordings, internet, commercial radio, and ham radio. They ship with 3 detachable cables: a 1.8 M flexible straight cable, a 1.8 M straight cable with 3.5mm plug, and a 3 M coiled cable. All cables feature a twist lock terminating in a 1/8" (3.5mm) professional gold plated screw-on 1/4" (6.3mm) adapter. The Pro Set 3 features the Heil Sound Phase Reversal Switch, which allows the user to "move" the incoming signal to significantly improve copy in a tough DX pile up.

Pro Series

Improved Comfort PRO SET ELITE



The redesigned Pro Set Elite features improved comfort and durability. It offers dual side, highly efficient speakers mounted in acoustically tuned chambers which offer high rejection of outside noise. The headset folds for easy transport and storage and comes in two models. The Pro Set Elite-6 contains the Heil HC-6 full range dynamic microphone element and the Pro Set Elite-iC contains the Heil iC electret microphone element specifically designed for Icom.

Application Specific PRO SETS



Pro Sets are lightweight, versatile boomsets with the Heil Sound Phase Reversal Switch, allowing the user to "move" the incoming signal to significantly improve copy in tough DX pile ups.

Pro Set Media Pro for computer has a high-level condenser element and two 1/8" plugs for applications requiring connection of a headset / boom mic to a computer's sound card.

Pro Set 6 for commercial broadcast applications utilizes the HC-6 dynamic element. Requires AD-1 adapter.

Pro Set iC with electret condenser designed for low mic inputs used on many Icom transceivers. The iC requires 5 volts of DC phantom power (provided by all Icom rigs) and includes AD-1 iC adapter.

Pro Set Accessories:
BAG -1 Leatherette travel bag for all Heil Sound headsets. HRO Price: \$29

Lightweight Headsets

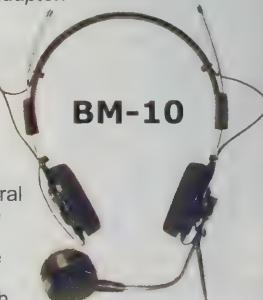
Handie Talkie Headset

These HTH single-sided and HTHD dual sided light weight headsets are designed for use with popular handheld transceivers featuring an in-line PTT.

Single Sided Model **HTH**

Dual Sided Model **HTHD**

HTH-K, **HTHD-K** works with 2-pin Kenwood, Baofeng, and Wouxun. **HTH-i**, **HTHD-i** works with 2-pin Icom. **HTH-Y**, **HTHD-Y*** works with TRRS Yaesu / Vertex. *For weather resistant Yaesu / Vertex, use the **HTH-Y** and **HTH-ADY** adapter.



Only 3 oz. Has an articulate boomset that is ideal for DXpeditions, mobile, and general rag chewing. The speakers are extremely sensitive and don't require much AF drive from the transceiver. The frequency response is 60 Hz - 12 kHz with very low distortion. The ear pads are replaceable acoustic foam. Two versions, a BM-10-Dynamic and a BM-10-iC (electret), to accommodate many radios on the market today. AD-1 cable required.

BM-17

The BM-17 is a new, lightweight headset designed for emergency communications available as either a single-side or dual-side model, with either a BM-17-Dynamic element or a BM-17-iC Electret element.

BM-17 Dynamic Dual
BM-17 Dynamic Single
BM-17 ICOM Dual
BM-17 ICOM Single



PRO MICRO PMD-6



The lightweight Pro Micro headsets are designed for commercial broadcast applications. They are available in single sided or dual sided models.

Pro Micro 6 is equipped with HC-6 element. AD-1 adapter required.

Pro Micro iC has an electret condenser designed for low mic inputs used on many Icom transceivers. The iC requires 5 volts of DC phantom power (provided by all Icom rigs) and includes an AD-1 iC adapter.

PRO MICRO PMS-6

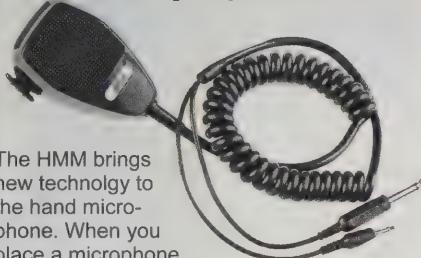




Handheld Microphone

Handheld Mic

HMM-Dyn | HMM-iC



The HMM brings new technology to the hand microphone. When you place a microphone element inside a clam shell, the result is a hollow muffled sound. To solve this problem, we installed a grill on the top of the microphone that detunes the internal resonance of the housing. We came up with a very special, full-range microphone element with great speech articulation. A very flexible but sturdy coil cable terminates with 1/8" male for the microphone and a 1/4" male for the PTT control. **HMM-Dyn (Dynamic)**

Also offered with the iC electret element as HMM-iC. AD-1 cable required. **HMM-iC**

Audio Processor

Parametric Receive Audio System PRAS EQ



The Heil Parametric Receive Audio System (PRAS EQ) is a state-of-the-art audio processor that enhances the internal audio systems of amateur radio, shortwave, commercial, and CB receivers. The PRAS EQ allows radio operators to modify, shape, and improve the audio output of their receivers using three separate equalization controls.

Powered Speakers HPS-5

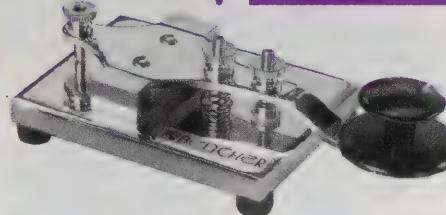
The Heil Powered Speaker (HPS-5) is a two-way, powered speaker designed to be used with the PRAS. Together they provide unmatched speech articulation and bring new dimensions to receive audio quality. The HPS-5 powered speaker features a 5" driver and a 24 watt amplifier. The PRAS and HPS-5 come with an XLR to XLR cable, 12-volt Y-Power Supply, 1/8" to 1/8" stereo source cable, and 1/4" to 1/8" stereo adapter.



HRO Price: PRAS-EQ \$229 HPS-5 \$189

VIBROPLEX®

The high-quality **Bencher** product line is now part of the oldest name in Ham Radio, Vibroplex.



Advanced Performance

RJ SERIES HAND KEYS

The "RJ" hand keys have an advanced American-style design derived from the telegraph keys that won the west, yet with modern features like Oilite bearings, a solid navy knob, gold-plated solid silver contacts, full locking adjustments of all tension and spacing parameters, and Bencher quality materials throughout. These keys are ideal for the new amateur just mastering code as well as the old time brass pounder anxious to "clear the hook." This key offers the Morse code operator an investment that will bring years of pride and satisfaction. Try the Bencher "RJ" hand key at your nearby HRO. You will be convinced there is no better key available. **HRO Price: RJ-1 Black \$139.95 | RJ-2 Chrome \$179.95**

Unique Design HEX KEY



Gold plated silver contacts. Molded acrylic finger paddles. Polished chromium parts. Magnetic tension adjustment and adjustable contact spacing. Black powder coated steel base. **HRO Price: \$309.95**

Iambic Paddles BY SERIES



You will enjoy the smooth, precise action of a Bencher paddle with any iambic keyer. These paddles feature a heavy steel base, gold plated silver contact points, non-skid feet, stainless steel adjustable spring, self-adjusting needle bearings, and large acrylic finger paddles.

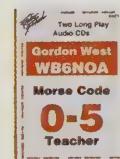
BY-1 Black - HRO Price: \$164.95

BY-2 Chrome - HRO Price: \$199.95

Single Lever Paddles ST SERIES

Superb Bencher features and construction for the ham who prefers single lever operation.

ST-1 Black - HRO Price: \$139.95
ST-2 Chrome - HRO Price: \$154.95



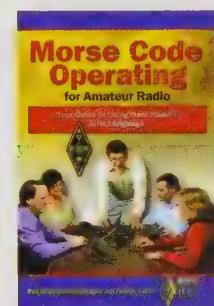
Gordon West WB6NOA Morse Code 0-5 WPM Teacher



Gordon West WB6NOA 0-5 WPM IN-DEPTH LEARNING COURSE



Gordon West WB6NOA 5-16 WPM SPEED BUILDER COURSE



Ham Radio's First Language

MORSE CODE OPERATING

Tune in to the low end of any HF band, and you'll find it populated with ham radio operators using Morse code for casual conversations, chasing DX or fast paced contests.

Morse Code Operating for Amateur Radio is your introduction into the fascinating world of radio communication by Morse code, now simply called "CW". It discusses how to get started in the hobby, the advantages to learning and using Morse code, how to set up your station for CW and how to adjust your Morse code key. **#0004**
HRO Price: \$17.95

KEYS/KEYERS

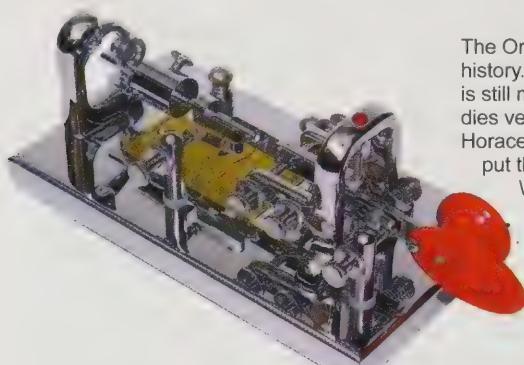
VIBROPLEX®

Non-Iambic Paddle VIBROKEYER

The Vibrokeyer is designed for those who prefer a non-iambic paddle. The single lever paddle imitates the automatic dots and dashes of the electric keyer with the same motion used to operate the "Bug."

Vibrokeyer Deluxe: Highly polished decorative chrome base with bright chrome top parts. Silky smooth movements are jeweled as in fine Swiss watches. **HRO Price: \$189.95**

Vibrokeyer Standard: A neat, crisp black textured finish base with bright decorative chrome parts. Non-jeweled movement. **HRO Price: \$154.95**

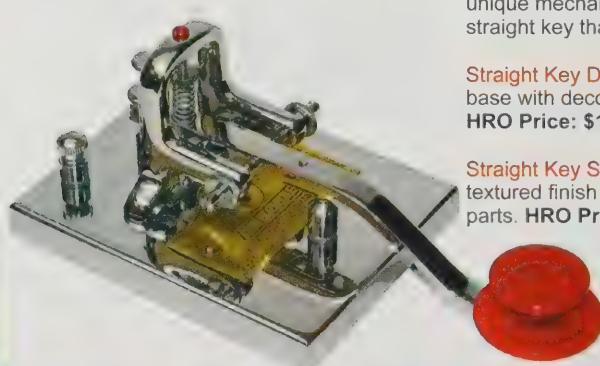


Standard or Deluxe IAMBIC

This is the modern descendant of the Original. It incorporates the traditional Vibroplex look for use with modern electronic keyers.

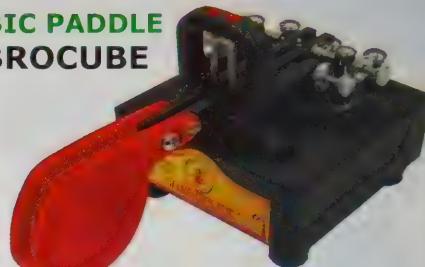
Iambic Deluxe: Same as Presentation but without the 24K gold plated brass plate. **HRO Price: \$199.95**

Iambic Standard: A neat, crisp black textured finish base with bright decorative chrome top parts. **HRO Price: \$159.95**



Quality & Pride Throughout!

IAMBIC PADDLE VIBROCUBE



The Vibrocube registers just under 6 pounds on the scale. It is a large paddle that stays in place on the desk and accommodates a large hand comfortably. The base is USA-forged cold-rolled steel, upper components are zinc, steel and brass. The finger pieces are hard red acrylic. Instead of magnetic tensioning, we use a spring loaded method which provides a greater range of possible tension settings than magnets allow.

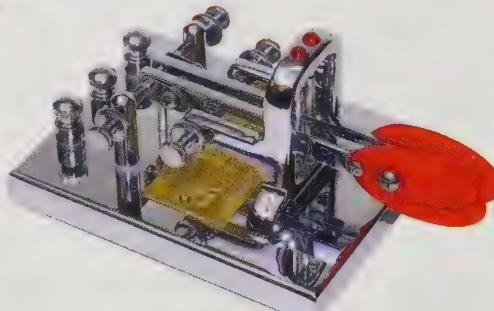
Vibrocube Standard- **HRO Price: \$189.95**

Vibrocube Deluxe- Like the Standard version with jeweled upper and lower trunion screws, an all-chrome base and all-chrome top components. **HRO Price: \$289.95**

Home/Portable CODE WARRIOR JR



The Code Warrior Jr. is a small footprint, steel base key with brass top parts and silver tipped copper contacts. Practical for home or portable use. Magnetic return action for wide range of tension adjustment. Weighs just 1 lb 10 oz. Budget priced. Available with black or blue base. **HRO Price: \$99.95**



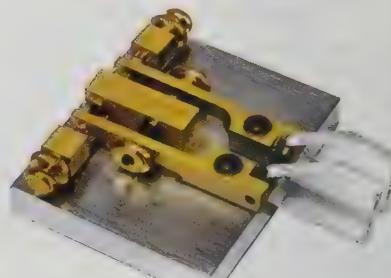
Standard or Deluxe STRAIGHT KEYS

Vibroplex® offers a STRAIGHT key with a unique mechanical action, unlike any other straight key that has ever been manufactured.

Straight Key Deluxe: Highly polished chrome base with decorative chrome top parts. **HRO Price: \$189.95**

Straight Key Standard: A neat, crisp black textured finish base with bright chrome top parts. **HRO Price: \$149.95**

Bright Finish CHROME WARRIOR JR



The Chrome Code Warrior Jr. is identical to the Code Warrior Jr. but has a decorative bright chrome polished steel base. **HRO Price: \$139.95**

MFJ

Morse Practice



Practice Oscillator MFJ-554

The world's finest code practice oscillator is designed for demanding classroom use and abuse. It produces a true pure sine wave side tone with no trace of harsh key clicks. You'll hear the clearest, sweetest sounding CW you have ever heard. Delivers full 1 watt into built-in 3" speaker – fills an entire room. Low distortion – less than .2% total harmonic distortion from its BTL (Bridge-Tied-Load) amplifier. Volume control, 400-1000 Hz tone control, on/off switch, power on LED, 1/4 inch key jack, 3.5mm external speaker jack uses 12 VDC. All metal enclosure. **HRO Price: \$114.95**



Morse Reader MFJ-461

Decodes and displays Morse code on two-line high-contrast LCD. Just hold close to receiver. 3-60 WPM. Use 9V, not included. **HRO Price: \$99.95**



Morse Code Tutor MFJ-418

Morse Code Tutor has all of the practice you will ever need built into a microprocessor. Work from a beginner to master! 3-60 WPM. Use 9V, not included. **HRO Price: \$99.95**

Keyers



Voice Keyer MFJ-434B

A microprocessor-controlled voice keyer that sends your call and does contest exchanges in your own natural voice. Store frequently used phrases, repeat messages continuously, use 8-pin modular or 8-pin round microphone plug. Record and play back off-air signals. **HRO Price: \$219.95**



Voice Keyer MFJ-464

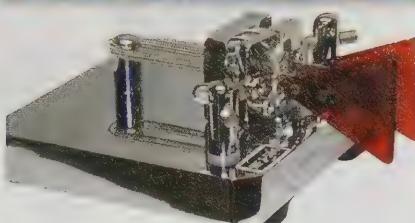
Keyer / Reader. They won't know you never passed the code test! Sends and reads 5-99 WPM. Auto speed tracking. 2-line LCD. Use paddle or keyboard. Easy menu operation. Front panel speed, volume controls. **HRO Price: \$219.95**



Voice Keyer MFJ-495

The MFJ-495 Memory Keyer is a full-featured memory keyer combining dual microprocessors and a nonvolatile EE-PROM chip for a full featured, low cost, high reliability design. Unlike other keyers, it uses an LCD display to set keyer functions and show the sending message. The MFJ-495 keys CW from a paddle, a keyboard and a serial computer interface. All code parameters are changed with an easy to use menu interface shown on the LCD display. **HRO Price: \$189.95**

Iambic Paddles/Keys



Chrome or Black MFJ-564 CHROME MFJ-564B BLACK

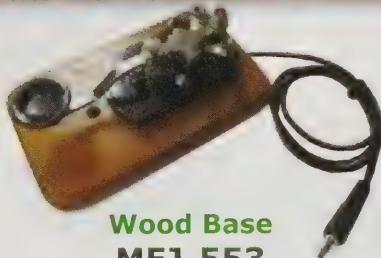
Chrome/black iambic paddle features a full range of adjustments in tension and contact spacing, self-adjusting nylon and steel bearings, contact points that almost never need cleaning, precision machine frame and non-skid feet on a heavy base. **HRO Price: \$99.95**



Minimal and Lightweight MFJ-561

Miniature, light-weight iambic paddle fits into an Altoids® tin! Precision formed, perfect for traveling. **HRO Price: \$34.95**

Straight Key



Wood Base MFJ-553

Deluxe wood base features a Morse code straight key on a non-skid, beautifully stained wood base. A steel under-plated bottom makes it stay on your table. 3' cable with 3.5 mm plug. Handsome. **HRO Price: \$39.95**



Code Oscillator MFJ-557

Practice sending Morse code. Telegraph key, code oscillator, speaker on heavy non-skid steel base. Volume and tone controls. Use only a 9V battery (not included). **HRO Price: \$49.95**

DIAMOND
ANTENNA

SWR / Wattmeter **SX-20C** **SX-40C**

Diamond RF SWR / Wattmeters cover the full range of amateur applications. The SX-20C and SX-40C are the newest models. The SX-40C can be used on 220 MHz with a correction factor.

HF - SHF | **SX-1100**



HF - UHF **SX-240**

All models:



- Illuminated meters.
- Require 12 volts DC. Plug Included.
- Low insertion loss generally less than 0.2 dB in HF range and 0.3 dB at higher frequencies.
- Power measurement accuracy generally $\pm 10\%$ on higher power ranges and $\pm 5\%$ on the lower.
- Low loss SO-239 connectors are used except for the high frequencies models as noted in the table.
- Measurements are forward power, reflected power, SWR and, on selected frequencies, PEP monitor.

Diamond Meters

Model	Freq MHz	PWR Watts	IN/OUT	HRO Price
SX-20C	3.5-30 50-54 130-150	30 300	SO-239	\$89.95
SX-40C	144-470	30 300	SO-239	\$79.95
SX-100	1.6-60	30 300 3000	SO-239	\$124.95
SX-200	1.8-200	5 20 200	SO-239	\$89.95
SX-240	3.5-30 50-54 130-150 430-450	30 300 3000	SO-239	\$299.95
SX-400	140-525	5 20 200	SO-239	\$109.95
SX-600	1.8-160 140-525	5 20 200	SO-239	\$179.95
SX-1100	1.8-160 430-450 800-930 1230-1300	5 20 200	SO-239 + N-Type	\$249.95

Palstar



Remote Coupler **PM2000A**

The PM2000A measures and displays forward power (up to 2000 W), reflected power, and SWR simultaneously on its dual movement meter system in the frequency range of 1.8 MHz to 60 MHz. Accuracy of the readings is assured because the PM2000A features a true shielded directional coupler. The backlit meter can display either peak or average power readings with a Peak Hold function, and has 300 and 2000 watt range settings.

The PM2000AM mobile version has a remote coupler that can be mounted up to 14' from the display head.

- PL259 coax connector.
- 115 VAC to 12 VDC adapter included.
- Size: 4.5" x 3.25" x 3.25" deep.
- Weight 1.2 lbs. / 0.55 Kg.

PM-2000A - HRO Price: \$198.95

PM-2000AM - HRO Price: \$198.95



DAIWA

Cross Needle **CN-501H**

- Cross needle design reads forward, reverse and VSWR simultaneously, no calibration required.
- Easy to read meter.
- PEP monitor function.
- Illuminated meter, 12 VDC plug provided.

Specifications

CN-501H	
Frequency Range	1.8-150 MHz
Power Range	15 / 150 / 1.5 KW
Rating	1.5KW (1.8-60 MHz) 1KW (144 MHz)
SWR Detection	4 W Minimum
Price	\$99.95



Professional Series **CN-901HP3**

- Easy to read, illuminated, extra large meter face with mirrored graph in .5 watt increments.
- Cross needle design reads forward, reverse and VSWR simultaneously, no calibration required.
- CN-901HP3 is the new 3000 watt version.
- 12 VDC plug provided.

Specifications

	CN-901 HP3	CN-901 V	CN-801 S-II
Frequency Range MHz	1.8-200	140-525	900-2500
Power Range Watts	20/200/3K	20/200	2/20
Impedance	50 ohm	50 ohm	50 ohm
Connectors	SO-239	SO-239	N-Type
SWR Detection	5 W Min	5 W Min	.5 W Min
Price	\$189.95	\$149.95	\$239.95

Go Online To Order
www.hamradio.com

ANTENNA ANALYZERS

MFJ

SWR Analyzers



MFJ-259D

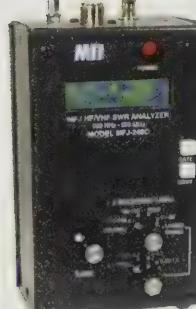
SWR Analyzer™ with impedance meter reads antenna SWR, complex RF impedance, resistance (R) and reactance (X) or magnitude (Z) and phase (degrees), coax cable loss in dB, coax cable length and distance to fault, return loss, reflection coefficient, inductance and capacitance. Tells battery voltage.

Has huge LCD digital readout with built-in frequency counter, side-by-side SWR and RF impedance meters, Ni-Cd / Ni-MH internal battery charger, battery saver feature, low battery warning, and easy-access batteries. Has smooth, reduction drive tuning. Truly portable. Uses 10 alkaline, Ni-Cd or Ni-MH batteries (not included) or 110 VAC with optional MFJ-1312D.



MFJ-269D

Covers 530 kHz to 230 MHz plus 415 to 470 MHz HF / VHF / UHF. Has all of the features of the MFJ-259D plus a 12-bit A/D converter (gives much better accuracy and resolution), CoaxCalculator™ (calculates coax line length in feet given coax length in electrical degrees and vice versa) and coaxial characteristic impedance input (zero to six hundred ohms).



MFJ-249C MFJ-249D

If digital display is all you need, MFJ-249C does everything MFJ-259D does without analog meters. Same great features at a lower price. Solid metal case. MFJ-249C covers .53-230 MHz. MFJ-249D covers .2-230 MHz.

Antenna Analyzer



MFJ-226 Antenna Expert

MFJ VNA Antenna Analyzer covers 1 to 230 MHz with 1 Hz resolution. Frequency sweep plots: SWR, Impedance, resistance, reactance, phase angle, complex return loss and Smith Chart. Shows sign of reactance. Features amazing accuracy with OSL (Open-Short-Load) calibration. Easy to read backlit LCD. Fits into your hand perfectly.

COMET

LCD Display

CAA500 Mark II

Commercial Grade SWR / Impedance Analyzer Range: 1.8 - 500 MHz (including 222 MHz band). Check antenna installations in just seconds. Determine SWR and resonance instantly. New color TFT display permits easy viewing of frequency and band information, even in the dark. Also has a Band Sweep function that allows you to measure SWR across the selected ham band and view it on the display graph. Makes SWR adjustments quick and easy. Both SWR and impedance measurements are provided simultaneously. Precision analog meter provides SWR / impedance changes in real time. HRO Price: \$439.95



Color Screen VNA



MFJ-223

1-60 MHz color VNA analyzer. Pocket-sized, with truly accurate SWR, R, X and Z. Vivid TFT multi-color display. Single-frequency and swept-frequency operating modes. Seamless DDS coverage with 100 Hz resolution from 1-60 MHz. Smooth "skip-free" encoder tunes fast or slow without missing a step. Field strength meter measures local signals, detects potential interference. High-lumen output, easy to read in direct sunlight. Easy setup with only four control switches with convenient on-screen soft menus. Personalized ID function programs your call or name onto the display.

MFJ

Graphic Analyzer



MFJ-225

2.5-180 MHz continuous two-port Graphic Analyzer. A compact, completely self-contained handheld graphing analyzer in the field. On the bench it becomes a full-fledged two-port (S21) desktop machine when teamed up with your PC. Using powerful IG-miniVNA freeware, you can run detailed data analysis and print out stunning color-graphic plots to document your work. Built-in back-lighted 3-inch LCD graphic display. Full screen, easy-to-view SWR bargraph, capture vivid swept displays for SWR, impedance, return loss, phase angle, and more. DDS generator.

RigExpert

ANTENNA ANALYZERS & TRANSCEIVER INTERFACES



AA-2000 ZOOM

RigExpert's flagship antenna analyzer

One product. Multiple benefits:

- Fast and accurate
- Multé – innovative multi-band measurement mode
- Big 480x800 full color BlanView® sun-readable display
- Multilingual interface with English, French, German, Spanish, Portuguese, Italian, Japanese, Ukrainian and Russian localizations selectable on-the-fly
- Built-in assistant & help
- Bluetooth v. 4.2 (Class B) to work with mobile AntScope application
- Can be powered with standard AA alkaline 1.5V batteries, NiMH 1.2V or LiIon 3.7V rechargeable batteries
- ZOOM interface with advanced measurement tools



RIGEXPERT HAS MANY DIFFERENT MODELS
WITH ZOOM CAPABILITY AND WITH BLUETOOTH™
COVERING VARIOUS FREQUENCY RANGES.

All specifications and features are subject to change without notice or obligation.

WWW.RIGEXPERT.COM

TEST INSTRUMENTS

MFJ

RFI/Noise Detector



Locate RFI Noise MFJ-805

Use this RFI detector to track down and eliminate RFI caused by radiating cables and wires. Find RFI generated by consumer devices, computers and high-tech office equipment. The detector isolates cables picking up RFI and indicates when you've suppressed the problem.

MFJ-805 also works with mobile installations, ferreting out alternator noise, ignition pulses, and microprocessor noise on feedlines and power leads.

With a signal generator you can profile the radiating current distribution of antennas, radials, feedlines, ground systems and control lines.

Easy-to-use. Simply clamp current transformer over suspected cable or wire to detect RFI causing common-mode currents. Super compact 2.25 W x 4.75 H x 1 D inches fits in your shirt pocket. Use 9 Volt battery (not included). Usable from VLF to VHF. Gain adjustable over 50dB range.

HRO Price: \$109.95

Field Strength Meter



100 KHz to 500 MHz MFJ-802B

This new easy-to-use MFJ antenna meter shows the strength of the actual field being radiated from your antenna. You can use it to determine the basic radiation pattern of your antenna and instantly know if it radiates better or worse. You can compare one antenna to another. Find out which HT antenna radiates the stronger signal. Measure your HF antenna now and compare it later to make sure its performance is still up to par. Adjust a ground lead, artificial ground, counterpoise or tune your transmitter or antenna tuner for maximum field strength. The MFJ-802B includes a built-in "sense" antenna to simplify measurements.

HRO Price: \$59.95

Power Line Noise



Power Line Noise MFJ-852

This MFJ handheld power line noise meter lets you walk or drive around the neighborhood to search out leaky insulators, loose hardware, and corroded ground lines quickly. You can track the noise source right down to the pole, transformer or insulator. You can also pinpoint faulty dimmers, electric fence arcs, sparking power equipment, neon signs and much more! Let equipment owners hear how troublesome their noise is and see first hand what's causing the problem.

HRO Price: \$129.95

Frequency Counter



300 Hz to 2.8 GHz MFJ-886B

This pocket-sized frequency counter has a large easy-to-read 2 W x 3/4 H 10-digit backlit LCD display and an 11-segment RF signal strength bar graph. It covers 300

Hz to 2.8 GHz with 1 Hz resolution and four selectable gate speeds. The unit measures just 2 3/8 W x 3-1/4 H x 1-1/8 D inches.

Low power consumption with internal lithium battery (800 mAh) and 12 VDC, 1A power adaptor/charger for 110 VAC. Has low battery indicator. Runs for about 12 hours on a single charge! Auto-sleep mode. MFJ-886B has a 50 ohm amplifier for 1 MHz to 3 GHz operation and a 1M ohm amplifier for 10 Hz to 50 MHz. It has 45 degree flip stand for easier viewing and a telescoping antenna with BNC connector. A hold button locks the MFJ-886B display and will continually display the last frequency received. There is also an automatic hold mode for locking in on special frequencies. HRO Price: \$139.95

Antenna Phase Shift



Precision Meter MFJ-222

MFJ uses a low-power, high-speed dual comparator circuit to make precision phase measurements between 1 - 50 MHz. A circuit indicates if

unknown phase lags or leads the reference signal.

Signals used for measurement can come from an antenna analyzer such as the MFJ-269 or any other generator that will supply at least 1 volt peak output into the load. It has a built-in switchable 50 Ohm load (250 mW max) so the use of an external load and BNC TEE is not needed in most tests. MFJ-222 reads the frequency of the signal so generators with only a coarse or no frequency readout can be used.

Setup is simple. Plug in the signal generator output to IN, connect the Reference OUT to the input of the network and the output of the network to UNKNOWN. Turn it on and read the phase shift and the frequency. A bright two line LCD display allows precision readout of the phase from -180 to +180 degrees without interpreting an analog meter or guessing at the phase polarity. With low power components, it will operate many hours on a single 9V battery or with the AC adapter MFJ-1312D (both optional). HRO Price: \$149.95

Step Attenuator



0 to 170 MHz MFJ-762

Step attenuator: 0 to 170 MHz; receive line only: 0 - 81 dB of attenuation; 50 ohms. Plot accurate antenna patterns. Connect the attenuator between your receiver and antenna and use your S-meter as a precision calibrated field strength meter. Eliminate blocking and cross-modulation by attenuating strong out-of-band signals before it gets into your receiver. Must be used only in a "Receive" line, not at the output of your transmitter. Connect it to your receiver input to properly terminate your preselector at all frequencies to ensure good out-of-band filtering. Use it to determine gain and loss and to evaluate linearity of circuits. Measure input and output level differences. Isolate one circuit from another. Change unknown reactive loads and sources by known levels. Extend the range of sensitive measuring equipment. HRO Price: \$99.95

Ham Radio Outlet carries the full line of MFJ products. For more information simply contact your local HRO store.

MFJ

DC Power Strips



MFJ-1118

High current multiple DC outlet. Use for two HF and / or VHF transceivers and six or more accessories from your transceiver's main 12 VDC power supply.



MFJ-1117

To power four HF / VHF radios (two at 35 amps each and two at 35 combined) simultaneously.



MFJ-1116

Deluxe multiple DC power outlet. 8 outlets for powering accessories.



MFJ-1112

MFJ-1112 is like the MFJ-1116 without on / off switch, voltmeter and fuse. 6 pair outlets.



MFJ-1128

Get the best of both connectors. Has Anderson Powerpoles® and high-current binding posts. Outlets 1, 2, 4-8 are Powerpoles®, outlet 3 is a 35 A high current binding post. Includes 7 pairs of Powerpole® 35A contacts, ten fuses.



MFJ-1128

12 outlets, factory installed fuses, handles 20 amps total.



MFJ-1126

8 outlets

12 - 35A contacts.



MFJ-1124

6 outlets

8 - 35A contacts.

DC Distribution Box

MFJ-1107

Four sets of Powerpole® outputs, a total of 40A, one binding post input, 40A. Two 2.1 mm center positive power plugs for accessories. Powerpole® mating connectors included. 4 W x 1.5 H x 2.75 D inches. HRO Price: \$49.95



DC Meters



Volt/Amp Panel Meter

MFJ-4422

4.5-30 VDC / 30 A Digital Volt / Amp Panel Meter with built in Current Shunt. Connect inline to monitor voltage and current of your mobile radio or accessory. Displays voltage and current simultaneously with dual .28 inch red / blue LED digits. Input / output with Anderson Powerpoles®. Handles up to 30 A. Reverse polarity protected. 3 W x 2 H x 1 D inches.



Rig Protection

MFJ-4402

Protect your mobile rig from many unseen operating problems found in vehicles today. A built in surge protection diode reduces the chance a high voltage spike will damage your rig, and has reverse polarity protection.



MFJ-4402 will shut down your rig if the voltage gets too low for proper vehicle operation. A delay timer, which is controlled off the ignition sense line, ensures your rig does not turn on until normal voltage is reached.

MFJ-4402 connects to your rig with Anderson Powerpoles® for high-current lines and a bayonet lug to the ignition sense line. A 30A fuse protects for over-current or reverse voltages. Fits nicely due to its compact size of 2-7/8 W x 4 H x 1-1/2 D inches.

MFJ-4403

Transceiver voltage conditioner provides reverse, overvoltage, voltage transient, and short circuit protections. Gives superb noise and ripple filtering and power supply buffering for your base, portable, or mobile transceiver. MFJ-4403 protects against accidental reverse voltage connection, alerting with a bright warning LED. Once DC polarity is corrected, MFJ-4403 recovers and operates normally.

Heavy duty transient suppressor handles peak currents up to 200A. Four farads of ultra high value capacitors filter off virtually all power supply noise and ripple, and provide power supply buffering. For temporary mobile operation like a rental car, run your transceiver a full 100 W SSB from your 10-15 A cigarette lighter socket. Standard Anderson Powerpole® connectors are used for the DC input and output. Compact 4 W x 3 H x 2 D inches.

MFJ's new voltage monitors show car battery voltage at all times. Three 3/8" tall bright red LEDs are easily seen day or night. Plug into a cigarette lighter and you are ready to monitor. Use 12 V or 24 V batteries, 8-30 VDC. Built-in fuse. MFJ-4431 comes with a mounted display, adhesive, plug with 2 foot wire. Module is a compact 2-5/8 W x 1-3/8 H x 2-1/4 D. MFJ-4432 is an all-in-one plug / module, 1-1/2 W x 1 H x 4 D.

Wattmeter/Power Analyzer

MFJ-4424

High Precision Wattmeter / Power Analyzer displays amps, volts, and watts continuously from 4.8-60 V. Measure current, peak current, power and peak power. Input / output with Anderson Powerpoles®. Backlit LCD display. 3.25 W x 1.75 H inches.

Mobile DC Monitors

CIG-Lighter MFJ-4431



CIG-Lighter MFJ-4432



CLOCKS

MFJ

12/24 Hour Clocks

MFJ-105D

This is the world's most popular ham radio wall clock! True 24 hour quartz movement. Huge 12-inch black face with large white numerals gives excellent visibility across room. Attractive gold colored hour, minute and seconds hands looks great on any hamshack or other wall! HRO Price: \$34.95



MFJ-131RC

Large 12-inch diameter analog atomic wall clock. 12 / 24 hour formats displayed under real glass face. HRO Price: \$49.95



MFJ-115

Set this 24 hour Quartz clock to UTC/ GMT and you can determine the time in any zone of the world at any time of the day. Premier world cities encircle its colorful world map face to indicate time zone. 12" face is easy to see across room. Seconds hand. HRO Price: \$34.95



MFJ-133RC

Dual time zone LCD Atomic Clock lets you read any two time zones in 24 or 12 hour format. Super compact, attractive silver clock folds up and slides in a shirt pocket. HRO Price: \$44.95



MFJ-123B

World map clock, shows 12 or 24 hour time anywhere in the world. Also shows day of week, month, date, and year. Time displays hour / minute / second. Daylight savings time feature. HRO Price: \$59.95



MFJ-112B

World map clock, shows 12 or 24 hour time anywhere in the world. Also shows day of week, month, date, and year. Time displays hour / minute / second. Daylight savings time feature. HRO Price: \$39.95

JUMBO Display



MFJ-139RC

This jumbo LCD clock display boasts giant 4 inch digits. The whole display is 15-3/4 W x 10-3/4 H x 3/4 D inches. Place it on a desk with its convenient flip stand or hang on your wall. You never need batteries for this solar-powered clock. Use 24 or 12 hour time format with MFJ exclusive TrueUTC™ time, including Hawaii and Puerto Rico. Select GMT or other time zone on the map. Turn daylight savings time on or off. Includes an indoor thermometer and hygrometer to read indoor humidity. It displays the month, date and day of the week in one simultaneous look at this handsome clock. Beautiful metallic tan color and bright LCD display. HRO Price: \$99.95

Dual Display



MFJ-148RC

Especially designed clock for amateur radio. This model has two independent atomic 24 / 12 hour clocks with exclusive UTC time zone and a dedicated station ten minute ID timer. A single time base keeps both clocks perfectly synchronized. It is radio controlled so it keeps perfect time. Set each clock independently for 12 or 24 hour display, time zone, and DST on / off. Built-in 10 minute station ID timer with LED and buzzer alerts. Timer resets by a simple press of a switch. Huge 5 W x 1.5 H LCD display with LED backlights. Flip stand for desk display and mounting hole for wall mount. Uses two AA batteries (not included). Sexy black hard plastic cabinet is 6.5 W x 3.5 H x 3/4 D inches. HRO Price: \$69.95



MFJ-117

12 / 24 Hour jumbo red LED wall clock. Runs off 110 VAC with 9 V battery (not included) time backup. Hour / minute set buttons on front panel. HRO Price: \$39.95



MFJ-113

Switchable 12 / 24 hour display with HUGE 1.8" red LEDs. Absolutely shines from across the room. Super compact 3-1/2 H x 9 W x 2-1/2 D in. Nine minute ID timer, alarm, 9 V battery backup (not included). Use 110 VAC, 60 Hz. Great for the sight impaired! HRO Price: \$24.95



MFJ-130BRC

12 / 24 hour wall or desk mount atomic clock. Almost 2 inch high digits can be read from across the room. DST can be disabled to accurately read UTC consistently. Running seconds, month, date, day, and indoor temperature are all displayed! HRO Price: \$34.95



MFJ-108B

Dual clock has separate 24 / 12 hour displays. Read UTC and local time simultaneously. Features huge high-contrast 5/8-inch LCD numerals that make it easy to read across the room. Mounted in attractive solid brushed aluminum frame with sloped face for easy viewing. Synchronize to UTC for split-second timing. Quartz controlled for excellent accuracy. Long life button battery included. 41/2 W x 1 D x 2 H". MFJ one year limited warranty. HRO Price: \$27.95



MFJ-121B

Read both UTC and local time at a single glance with this dual atomic clock. Displays 24 / 12 hour time simultaneously – set each independently. Automatic backlight lights up every day at your preset time for 8 hours. Mounted in a handsome silver-metallic, hard-plastic frame, it has HUGE, easy-to-see 1 W by 2 H inch LCD numerals, an exclusive UTC zone and running seconds display. 11-3/8 W x 7-1/4 H x 1 D mounts on wall or desk mount. Daylight savings time can be disabled independently in each clock display. Uses four AA batteries (not included). HRO Price: \$99.95

Lido

Radios are NOT included.

They are shown for illustration purposes only.

Between The Seats Mount LM-WEDGE

Plastic device holder wedges between seat and console. Adjustable viewing angle, provides multiple options for installing two devices: Mobile Radio Remote Head, HT, Microphone

(Cell phone attaches with the optional LM-H holder) in any combination you prefer.

HRO Price: \$49.95



Bendable Floor Mount LM-300



This mount has a 22" Gooseneck Swivel Mounting Pedestal, allowing you to place your device in the perfect position for optimal viewing. Just loosen the passenger seat bolt, slide the mount bracket under the bolt, tighten the bolt. The mount comes with a 4 hole AMPS plate to mount remote heads. HRO Price: \$26.95

Yaesu/Icom Adaptor LM-AD1



Adapter kit for the remote display heads that use the camera style threaded socket to hold the display head to the mount.

The kit is sold separately and attaches to all the Lido Mounts. HRO Price: \$9.95

Rail Mount With Express Plate LM-1000EXP

HRO Price: \$19.95



Optional side-grip holder fits all Lido Mounts. Place your device in the LM-H and squeeze the arms together. Push button on the side releases the arms. Holds large size HT's, remote display heads, GPS units, cell phones etc.

HRO Price: \$14.95



Vent Mount
LM-100

The vent mount has a 4 hole AMPS pattern that can be attached to Alinco, Icom, Kenwood and Yaesu remote head brackets. Swivel 360 degrees for optimal viewing. The vent mount can be installed or removed in seconds. Fits most horizontal vent louvres. It does not work on the large circular vents like those found in Mustangs and PT Cruisers. Remote head bracket not included.

HRO Price: \$14.95

Vent Mount With Side Grip Holder LM-100



The vent mount includes a side grip holder for some Kenwood and Icom remote heads. The grip has padded arms and can handle devices from 1 7/8 inches to 4 1/4 inches in height. Easily remove your device to store out of sight when you reach your destination. For use with horizontal air vent louvres. HRO Price: \$24.95



Cup Holder Mount LM-801EXP

The Cup Holder mount works for either an HT or a remote radio head. A flywheel control on the top of the base allows the user to adjust the mount

to just about any size cup holder. The mount stands 5 1/2 inches tall and can be installed or removed in seconds.

LM-801EXP HRO Price: \$24.95

LM-802 (Heavy Duty) HRO Price: \$44.95

Side Grip Holder LM-H



Optional side-grip holder fits all Lido Mounts. Place your device in the LM-H and squeeze the arms together. Push button on the side releases the arms. Holds large size HT's, remote display heads, GPS units, cell phones etc.

HRO Price: \$14.95

Nifty!

HT DESK STAND



The HT Desk Stand sports a glossy jet black finish. Main support plate and shelf are made of tough, durable polycarbonate and the steel base has a heavy-duty powder coat finish. This thing looks great! Adjustable to fit all hand held radios. Provides solid stable support, holding the radio at a convenient viewing and operating angle.

HRO Price: \$35.95

WIRE BALE STAND



Our Universal Wire Bale Stand can be used with any radio equipped with a foldable wire stand, providing an ideal angle for viewing the display and working the controls. It can be used with any radio having a foldable wire stand, including the FT-991, IC-7300, IC-7000, IC-718, TS-2000, TS-590, K3, K3S, DX-SR8T. HRO Price: \$20.95

DESK STAND



Desk Stands are custom designed to perfectly fit your radio, providing an ideal angle for viewing the display, and stable support for touching buttons on the screen and working the controls. Your radio securely attaches to the stand using two thumbscrews for the mounting holes at the back of the control head. An additional four rubber feet are provided for use with the main body of the radio allowing it to also be placed on the desk top.

Icom ID-5100 HRO Price: \$26.95

Icom IC-2730 HRO Price: \$25.95

Elecraft PX3 HRO Price: \$23.95

Yaesu FTM-400XDR HRO Price: \$24.95

MINI-MANUALS/STUDY AIDS

Radio Manuals



KENWOOD

Model	Description	HRO Price
NIFTY-TH-D72A	Mini-Manual + Reference Card	\$24.95
NIFTY-TH-K20/K40	Reference Card	\$6.95
NIFTY-TH-D74A	Mini-Manual + Reference Card	\$24.95
NIFTY-TM-D710G	Mini-Manual	\$22.95
NIFTY-TM-V71A	Mini-Manual	\$18.95
NIFTY-TS-2000	Mini-Manual	\$18.95
NIFTY-TS-480S/HX	Mini-Manual	\$18.95
NIFTY-TS-590S/G	Mini-Manual	\$19.95

ALINCO

Model	Description	HRO Price
NIFTY-DJ-500T	Reference Card	\$5.95
NIFTY-DJ-G7T	Mini-Manual	\$22.95
NIFTY-DX-SR8	Mini-Manual	\$16.95
NIFTY-DR-135/235/435	Reference Card	\$6.95
NIFTY-DR-635T	Mini-Manual	\$19.95

MFJ

Model	Mini-Manual Description	HRO Price
NIFTY-MFJ259C	Mini-Manual MFJ-259	\$12.95
NIFTY-MFJ269/C	Mini-Manual MFJ-269/C	\$12.95

MISCELLANEOUS

Model	Description	HRO Price
NIFTY-MM-BandPlan	Amateur Radio Band Plan	\$10.95
NIFTY-D-STAR-BOOK	E-Z Guide to D-Star Operations Book	\$15.95
NIFTY-DXGUIDE	DX Field Guide Book	\$17.95
NIFTY-PSK31-BOOK	E-Z Guide to PSK31 Operations	\$14.95
NIFTY-RADIOMG	Radio Monitoring Guide	\$15.95
NIFTY-ECHOLINK-BOOK	Guide to Echolink	\$15.95
NIFTY-K3	Mini-Manual Elecraft K3	\$22.95
NIFTY-KX2	Mini-Manual Elecraft KX2	\$20.95
NIFTY-KX3	Mini-Manual Elecraft KX3	\$22.95
NIFTY-P3	Mini-Manual Elecraft P3	\$10.95

ICOM

Model	Description	HRO Price
NIFTY-IC-T70A	Reference Card IC-T70A	\$6.95
NIFTY-IC-718	Mini-Manual IC-718	\$16.95
NIFTY-IC-2730	Mini-Manual IC-2730	\$16.95
NIFTY-IC-7100	Mini-Manual IC-7100	\$26.95
NIFTY-IC-7300	Mini-Manual IC-7300	\$22.95
NIFTY-IC-7610	Mini-Manual IC-7610	\$24.95
NIFTY-IC-9700	Mini-Manual IC-9700	\$24.95
NIFTY-ID-31A	Mini-Manual + Reference Card ID-31	\$24.95
NIFTY-ID-51A Plus 2	Mini-Manual + Reference Card ID-51A	\$24.95
NIFTY-ID-4100	Mini-Manual ID-4100	\$24.95
NIFTY-ID-5100	Mini-Manual ID-5100	\$24.95



Gordon West

Study With The Best!

STUDY MANUALS

GWTM	Technician Class Book	\$24.95
GWTW	Technician Audio Theory Course on 4 CDs	\$29.95
NCS	Tech Book plus Software Package	\$34.95
GWGM	General Class Book	\$24.95
GWGW	General Audio Theory	\$29.95
GWEM	Extra Class Book	\$32.95
GWEW	Extra Audio Theory Course on 6 CDs	\$44.95
ECS	Extra Book plus Software Package	\$46.95
HOS	W5YI Ham Operator Software without books	\$29.95
HOSB	W5YI Ham Operator Software Plus 3 books	\$99.95
GUS	General Book plus Software	\$34.95

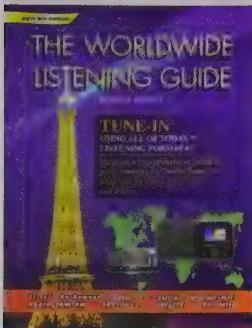
MORSE CODE STUDY MATERIALS

GW05	Morse Code 0-5 wpm on 8 CDs	\$39.95
GW13	Morse Code 6-16 wpm on 8 CDs	\$39.95
GW20	Morse Code 10-28 wpm on 8 CDs	\$39.95
GWCT	CW Refresher Course 0-5 wpm on 2 CDs	\$14.95

OTHER BOOKS

GSE	Getting Started in Electronics	\$19.95
MINI-4	Mini Notebook, Vol. 4: Electronic formulas, symbols, and circuits	\$12.95
BELC	Basic Electronics	\$19.95
BDE	Basic Digital Electronics	\$17.95
BCE	Basic Communications (analog) Electronics	\$17.95
GROL+	Get Your Commercial Radio License Book	\$49.95
GRSP+	Get Your Commercial Radio License Book + W5YI Study Software Package	\$79.95
RADAR	License Book + W5YI Study Software Package	

SWL Guides



Worldwide Listening Guide

Written by John Figliozzi. New and expanded 9th edition provides comprehensive program guide to all of the ways programs can be heard: "live", on-demand, WiFi, podcast, satellite, internet, digital, and, of course, analog AM, FM, and SW. Spiral bound to open in a flat, easy-to-use format. HRO Price: \$29.95

Nifty!

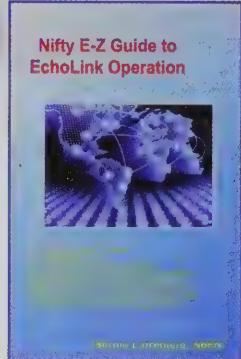
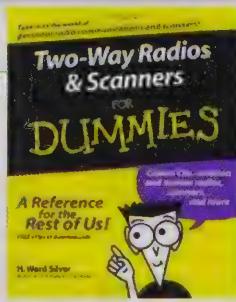
Radio Monitoring Guide

Covering 0.5 to 500 MHz, this reference to shortwave, police, fire, aviation, marine radio and more, combines shortwave listening and VHF / UHF scanning into one guide. Use it as a tuning guide, and for programming the scanning capabilities of your radio. Has information useful for monitoring radio services including International Space Station frequencies and NASA rebroadcasting. Amateur radio HF DX propagation beacons, plus Maritime and other popular emergency and communication nets are covered. Web page URL's are provided to sites offering current broadcast schedules. HRO Price: \$15.95

Scanner Books

Two-Way Radios and Scanners For Dummies

Want to check out the morning news in London, help out in emergencies, or tune in to the big race? Two-way radios open up a world of possibilities — literally. This handy guide tells you about the equipment you need, fills you in on radio etiquette, shows you how to stay legal, and gives you lots of cool ideas for family-friendly radio activities. HRO Price: \$21.95



Nifty!

Echolink Operating Guide

This ideal reference for those getting into EchoLink shows how to make contacts using your computer or DTMF equipped transceivers.

- Straight forward, simple explanations for both beginning & experienced users.
- Voice over Internet technology.
- EchoLink computer users, simplex links, and repeaters.
- Installing and using EchoLink software.
- Call sign validation and authentication.
- RF Link transceiver requirements.
- Establish RF EchoLink simplex and repeater nodes.
- Create a node by interfacing your transceiver to a computer.
- Configure EchoLink's sysop setup menus.
- Add EchoLink capability to a repeater.
- Numerous clear illustrations.

HRO Price: \$15.95

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Ham Magazines

MONTHLY

CQ, QST

BI-MONTHLY

QEX, NCJ
On The Air

CQ Publications

ARC2021
SLOPER
TSVAAGR

Amateur Radio Calendar 2021
Sloper Antennas Book
The short vertical antenna and ground radial book.

artsci
US

Repeater Map Book 2020 ED

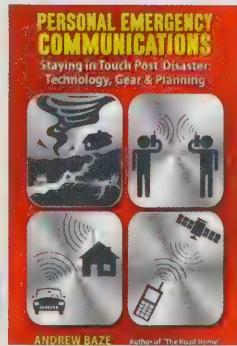
USRG



The PERFECT traveling companion. Road maps show major highways and cities in every state. Amateur radio repeater frequencies are included. This is a must for truckers and travelers. Enhanced maps provide great highway detail. HRO Price \$17.95

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Do you want to be prepared for the next power outage or a natural disaster? This book is written for everyone — no radio expertise required! It will tell you how

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Ham Adventures

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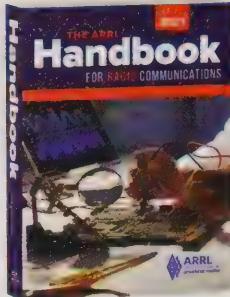


Do you love an adventure? Especially when it includes ham radio in emergency communications, disasters and peril? Do you know any young adults who might be interested in radio? Would you like to learn more about disaster preparedness? Entertaining and informative for young and old alike, this well-reviewed book will hook you from the beginning and take you on a boy and father's trek back from the wilderness to the broken city where the rest of the family waits, unaware of the other danger lurking on their doorstep. HRO PRICE: \$12.99

ARRL BOOKS



ARRL Handbook 2021



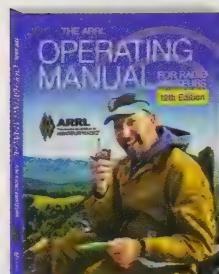
This 98th edition of The ARRL Handbook is your complete guide to radio experimentation, discovery, and innovation. It is The Handbook - written by radio amateurs for everyone with a desire to advance the pursuit of wireless technology.

Key Topics

- Radio electronics theory and principles.
- Circuit design and equipment.
- Radio signal transmission and propagation.
- Digital and analog modulation and protocols.
- Antennas and transmission lines
- Construction practices.

Softcover #1397 - HRO Price: \$49.95

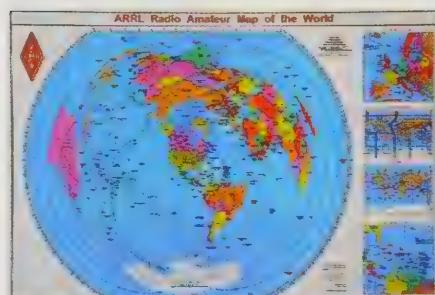
ARRL Handbook 2021 (Six-Volume Set) Six-volumes. The ARRL Handbook is divided into six softcover volumes shrink-wrapped together. #1403 - HRO Price: \$59.95



Operating Manual 12th Ed.

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#0598 - HRO Price: \$24.95



ARRL MAPS

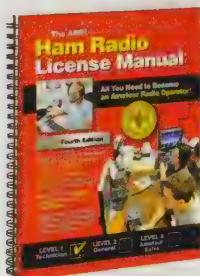
Map	North America Azimuthal#7717
Map	North America Robinson#8804
Map	North American#8977
GRID ATLAS	Grid Locator Atlas#2944
GRID MAP	Grid Locator Map#1290

ARRL LISTINGS

DXCC LIST	Official ARRL DXCC List	..#0840
LB	Log Book#1250
RD	Repeater Directory#0758

Radio Manuals

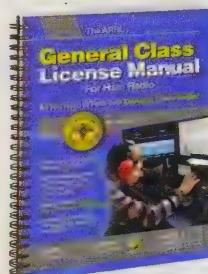
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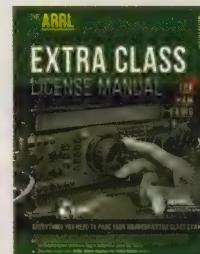
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Extra Class exam: rules, specific operating skills and more advanced electronics theory. To upgrade you must already hold a General Class license then pass a written examination. This manual is valid through 7/20/2024.

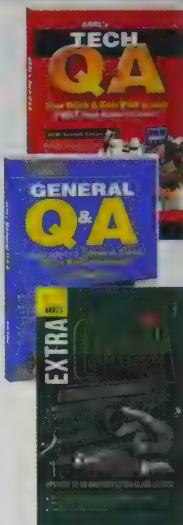
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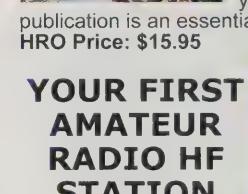
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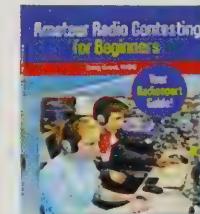
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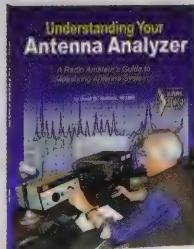
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ADDITIONAL TECHNICAL BOOKS

HK..... Hints and Kinks (18th ed.)
LBD..... Low Band DXing (5th ed.)
RFI..... Radio Frequency Interference
HRE..... Hands On Radio Experiments



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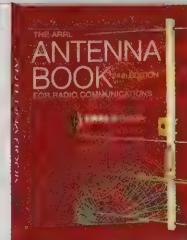
- Auto on/off mobile power control.
- Station power monitor.
- AC current monitor.
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- 40 Meter QRP CW transceiver.
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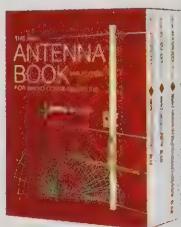
Antenna Books

ARRL Antenna Book 24th Ed.

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ACVOL8..... Antenna Compendium Vol. 8
RSGB-SA..... Stealth Antenna Book 5

Raspberry Pi 2 Camera Workshop Manual

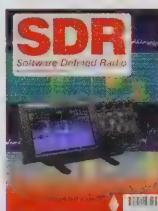
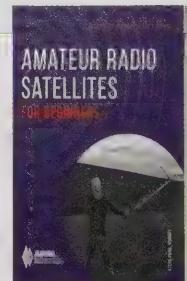


The Raspberry Pi Manual is the perfect introduction to the affordable small computer. Covers the Raspberry Pi 2 (model B). It is aimed at those switching on their Pi for the first time, guiding them through the full process of setup and configuration. The manual then introduces various aspects of computing and programming, and provides a variety of recipes to demonstrate the acclaimed versatility of the Raspberry Pi's hardware and software. #1022 HRO Price: \$28.95

Starter Guide

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SDR SOFTWARE DEFINED RADIO

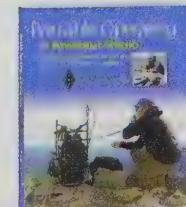
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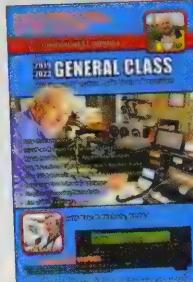


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TFT touch panel Display**

Built-in High Precision GPS Receiver

**Easy Hands-Free Operation
with Built-in Bluetooth® unit**

**High-Resolution and High-Speed
79 channel Band scope**

**CAM (Club channel Activity Monitor)
Function**

**FM Friendly Digital by AMS
(Automatic Mode Select)**

WIRES-X Portable Digital Node Function



**C4FM/FM 144/430MHz DUAL BAND
DIGITAL TRANSCEIVER**

FT3DR

Actual Size



C4FM
Digital Communication

AMS
Automatic Mode Select



The Perfect Choice

Sophisticated Dual Band Digital Transceiver

Built to Commercial Grade Specifications



«Actual Size»

**C4FM/FM 144/430MHz DUAL BAND
5W DIGITAL TRANSCEIVER**

FT-70DR

C4FM
Digital Communication
Clear and Crisp Voice Technology

AMS
Automatic Mode Select

Advanced C4FM Digital

System Fusion Compatible

Combines FM and Digital Communications
with AMS (Automatic Mode Select)

Coordinated Group Operation
with Digital Group ID

700 mW of Loud, Clear Voice, Audio Output

5 Watts of Reliable RF Power
from a Compact Handheld Unit

Wide Band Receive Coverage 108 - 579.995 MHz

Rugged Construction
Meets IP54 (Dust & Water protection)

Large Multi-Color Operating Mode Indicator

Huge 1,105 Channel Memory

Utmost Robust Construction

Reliable...High Power...Compact Mobile

Large LED
AMS & Mode Indicator
AMS: Automatic Mode Select

System Fusion-II
Compatible

C4FM Digital
and
Conventional FM modes

3W Powerful & Clear Audio
with
Front Speaker

True 50W
High Power Transmitter
with
FACC: Funnel Air-Convection
Conductor (Wind Tunnel)

Sophisticated Digital-
Group-ID (DG-ID)
Operation



C4FM/FM 50W
VHF/UHF Digital AMS Transceiver

FTM-7250DR **AMS** 

Automatic Mode Select

C4FM
Digital Excellence
Clear and Crisp Voice Technology

High Performance Commercial Grade Specifications

**High Performance with Many Supportive Features
Packaged in a Compact Body**



«Actual Size»

**VHF / UHF 5W Dual Band
FM Handheld Transceiver**

FT-65R

Commercial Grade Specifications
compact, rugged construction
(IP-54/MIL-STD-810C, D and E)

Large Front Speaker
One Full Watt of Crisp, Clear Audio

5 Watts of Reliable RF Power,
Three Selectable TX Power Settings
(5 W /2.5 W /0.5 W)

QRK (Quick Recall Key) :
Four User Programmable Keys
provide Quick Access to favorite functions

Included 1,950mAh Li-ion Battery Pack
capable of over 17 hours of operation

VOX Operation Available
with the optional Earpiece Microphone

Emergency Signaling :
Bright white LED Flashlight, Audible Alarm
and Immediate HOME Channel Access

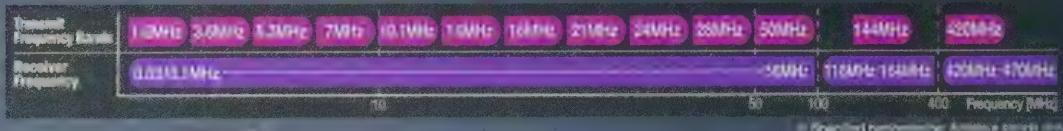
Useful Features:

- Versatile scanning capabilities
- WX Channels with "Severe Weather" Alert
- FM Broadcast Receiver
- PC Programming
- Transceiver-to-Transceiver Cloning

The radio... YAESU

Wide-Coverage Transceivers

HF through VHF/UHF in One Radio



*A Superb All-around Transceiver
with a built-in real-time spectrum scope
and superior basic RF performance*

HF/50/144/430MHz 100W All Mode Transceiver

FT-991 A

Operating Modes: CW/SSB/AM/FM/C4FM

• Covers all modes SSB/CW/AM/FM and C4FM digital

• Built-in Real-Time Spectrum Scope with Multi-Color Waterfall Display

• 100 Watts (2. Meter & 70 Centimeter, 50 Watts) of Solid Performance

• IFR DSP for Superb Interference Rejection

• 3.5-inch TFT Full-Color Touch Panel Display

• Advanced Support for C4FM Digital

* Desktop Microphone &
External Speaker
(Optional)



*The Ultimate Backpack
Multi-Mode Portable Transceiver*

HF/50/144/430MHz 6W All Mode Transceiver

FT-818ND

Operating Modes: CW/SSB/AM/FM • C4FM digital mode is not supported

• Incredibly Small Size (5.3" x 1.5" x 6.5") and Light Weight (under 2 pounds)

• High Frequency Stability ($\pm 0.5\text{ppm}$) TCXO Included

• 6Watts of TX Output Power (AM: 2Watts)

• 1900mAh Ni-MH Battery Pack and Battery Charger Included

• AA Alkaline Battery Operation

YAESU
The radio

YAESU USA

6125 Phyllis Drive, Cypress,
CA 90630 (714) 827-7600

For the latest Yaesu news, visit us on the Internet: <http://www.yaesu.com>

Specifications subject to change without notice. Some accessories and/or options may not be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

Exciting Yaesu Field Gear

HF/50 MHz 100 W All Mode Transceiver

FT-891



An Innovative Multi-band, Multi-mode Transceiver within an Ultra Compact Body

- Rugged construction in a Compact Mobile Package (6.1" W x 2.0" H x 8.6" D)
- Stable 100 Watts of RF Power Output with efficient Dual Internal Fans
- Legendary Yaesu Receiver Performance
- Triple conversion receiver with a 1st IF frequency of 69.450 MHz
- 3 kHz Roofing Filter (equipped as standard)
- Detachable Front Panel permits convenient mounting and operation
- Large dot matrix LCD display with Rapid Spectrum Scope
- Enhanced Operating Features:
 - Large diameter Main Tuning Dial (1.6") with Torque adjustment
 - Pop-up Menus for quick and easy operation
 - Large Transmit/Receive indicator
 - Three Programmable Front Panel Function Keys
- Especially designed FC-50 External Antenna Tuner (option)

YAESU
The radio

YAESU USA

6125 Phyllis Drive, Cypress,
CA 90630 (714) 827-7600

For the latest Yaesu news, visit us on the Internet: <http://www.yaesu.com>

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.



American Built & Reliable

All products listed are in stock at all
Ham Radio Outlet Stores.
Please visit www.hamradio.com
for pricing and product details.



Buy With Confidence

ABR Industries manufactures all assemblies in our Houston facility, guaranteeing quality control from start to finish. Being a critical component of your system or station, it's important to know where and how your coax cable assemblies are built.

Not All Cable Assemblies are Created Equal... See the ABR Difference.



ABR213 (PN:2213A)
Stranded Center, Solid PE Dielectric, 97% Copper Braid.
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.

Attenuation per 100ft	Power Rating
0.6dB @ 10MHz	3.43kW
1.0dB @ 30MHz	1.95kW
1.4dB @ 50MHz	1.5kW
2.4dB @ 150MHz	.83kW
4.5dB @ 450MHz	.45kW

- Application – HF workhorse cable. Heavy Duty coax for applications up to 500MHz. To be used with a heavy-duty rotor or stationary antenna systems.
- Lengths 1.5ft to 150ft in stock



ABR240F (PN:218XATC)
Stranded Center, Gas Injected Foam Dielectric,
100% Foil + 95% TC Braid.
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.

Attenuation per 100ft	Power Rating
0.9dB @ 10MHz	2.16kW
1.4dB @ 30MHz	1.24kW
2.1dB @ 50MHz	0.96kW
3.6dB @ 150MHz	0.55kW
6.3dB @ 450MHz	0.31kW

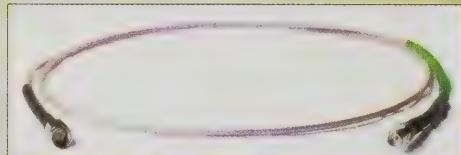
- Application – HF / Mobile cable. Medium duty coax for applications up to 500MHz. To be used with stationary antennas and light weight rotor applications
- Lengths 1.5ft to 250ft in stock



ABR400F (PN:25400F)
Stranded Center, Gas Injected Foam Dielectric,
100% Foil + 95% TC Braid.
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.

Attenuation per 100ft	Power Rating
0.8dB @ 30MHz	2.77kW
1.1dB @ 50MHz	2.14kW
1.8dB @ 150MHz	1.22kW
3.3dB @ 450MHz	0.69kW

- Application – HF / VHF / UHF Low Loss cable. Versatile cable for applications to 500MHz. To be used with a heavy-duty rotor, array, or stationary antenna system.
- Lengths 1.5ft to 150ft in stock



RG316/U Teflon® .100" OD
HT jumpers "antenna attachment for better coverage"

Part#	Description	Length/ft
23316-NM-3	N Male Both ends	3
23316-NM-6	N Male Both ends	6
23316-SM-SF-3	SMA Male-SMA Female	3
23316-SM-SF-6	SMA Male-SMA Female	6
23316-SM-SF-9	SMA Male-SMA Female	9
23316-SM-SF-12	SMA Male-SMA Female	12
23316-SM-SF-15	SMA Male-SMA Female	15
23316-SM-3	SMA Male Both Ends	3
23316-SM-6	SMA Male Both Ends	6
23316-SM-PL-3	SMA Male-PL259	3
23316-SM-PL-6	SMA Male-PL259	6
23316-SM-SO-3	SMA Male-SO239	3
23316-SM-SO-6	SMA Male-SO239	6



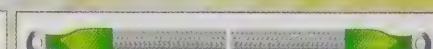
ABR400F (PN:25400F)
Stranded Center, Gas Injected Foam Dielectric,
100% Foil + 95% TC Braid
w/N Male plugs each end. Complete
w/Weatherproof Heat Shrink Tubing (WP-HST)

Attenuation per 100ft	Power Rating
0.8dB @ 30MHz	2.77kW
1.1dB @ 50MHz	2.14kW
1.8dB @ 150MHz	1.22kW
3.3dB @ 450MHz	0.69kW

- Application – VHF / UHF Low Loss cable. Versatile cable for applications to 8 GHz. To be used with a heavy-duty rotor, array, or stationary antenna system.
- Lengths 1.5ft to 150ft in stock



1" Tinned Copper Flat Ground Braid.
7ga 85/Amps w/1/4" Stud Ring Terminals.
Quick & Easy Grounding Terminations.
Lengths 3ft to 20ft in stock



1/2" Tinned Copper Flat Ground Braid.
10ga 53/Amps w/#10 Stud Ring Terminals.
Quick & Easy Grounding Terminations.
Lengths 1ft to 12ft in stock



233/2-G4-(length)
Unique design (Nickel Grommets 4" Spacing)
allows for easy attachment to a vehicle's body or
truck bed to create a "ground plane"
Good option as a buss-bar in the shack
1/2" wide tinned copper 38x48x8/34 10ga 53 amps
Lengths 1.5ft to 10ft in stock



Solid State Amplifier LA-1K

We are pleased to announce that the LA-1K far exceeds all standards in FCC testing at an FCC-certified laboratory and received certification for equipment authorization.

- Cooling: variable speed fans (3 speed).
- Chassis: .090 gauge aluminium.
- Top cover: .090 gauge aluminum powder coated.
- Dimensions: 12.75" W x 6.25" H x 16.5" D.
- Shipping weight: 27 lb, 12.25 Kg.
- Design concept: full compatibility with the Palstar HF-AUTO autotuner.
- Warranty: Two Years.

Specifications

- SSB power: 1000 watts PEP CW ICAS.
- CW Mode: power levels up to 850 W.
- FM / RTTY: 500 watts.

- AM: 275 watts.
- Frequency range: 1.8 to 54 MHz.
- Display: Color TFT touch screen.
- Output: 3 x RF SO-239 or type N
- ALC: Exciter power control.
- Drive Required: 40-55 W (all bands).
- Gain: 13+/-1 dB (nominal.)
- RF sensing: auto band switching.
- RF Output: vacuum relay T/R switching.
- Power supply: internal medical grade.
- DC supply: 100 VAC - 260 VAC 50 V @ 42 amps.
- Power devices: 2 x 5600 H 600 W LD-MOS.
- Auto-Protect: SWR / short circuit.
- Intermod: low IMD distortion >-35 dB.
- Pure signal: sample@+10 dBm (rear panel@1 kW output.)

Amplifier Specifications

	Model	Frequency Range	Modes	Power In	Power Out	Voltage	Current	Pre-amp	Connector	Weight
AMERITRON	AL-1500	160-15 M*	SSB, CW	65 W	1500+ W	220 VAC	15 A	—	SO-239	50 lb**
	AL-1200	160-15 M*	SSB, CW	100 W	1500 W	220 VAC		—	SO-239	50 lb**
	ALS-1300	160-15 M*	SSB, CW	90 W	1200 W	220 VAC	15 A	—	SO-239	22 lb**
	ALS-1306	160-15 M*	SSB, CW	100 W	1200 W	110/220 VAC	25/12 A	—	SO-239	22 lb***
	ALS-500M	160-15 M*	SSB, CW	100 W	500 W	13.8 VDC	80 A	—	SO-239	7 lb
	ALS-600	160-15 M*	SSB, CW	100 W	600 W	110/220 VAC	16 A / 110 V	—	SO-239	13 lb**
	ALS-606	160-6 M	All	75 W	600 W	120/220 VAC	12/6 A	—	SO-239	15 lb
	AL-80B	160-15 M*	SSB, CW	100 W	1000 W	110/220 VAC	15/10 A	—	SO-239	54 lb
	AL-800	160-15 M*	SSB, CW	100 W	750 W	110 VAC	12 A	—	SO-239	67 lb
	AL-800H	160-15 M*	SSB, CW	55 W	1500 W	240 VAC	9 A	—	SO-239	69 lb
	AL-811	160-15 M*	SSB, CW	75 W	600 W	110/220 VAC	8/4 A	—	SO-239	40 lb
	AL-811H	160-15 M*	SSB, CW	75 W	800 W	110/220 VAC	8/4 A	—	SO-239	41 lb
MIRAGE	AL-82	160-15 M*	SSB, CW	100 W	1500 W	220 VAC	15 A	—	SO-239	52 lb***
	B-34	144-148 MHz	All	2 W	35 W	12-15 VDC	4 A		SO-239	2 lb
	B-34G	144-148 MHz	All	2 W	35 W	12-15 VDC	4 A	Yes	SO-239	2 lb
	BD-35	143-149 430-450	FM	7 W	45 W	12-15 VDC	7 A		SO-239	3 lb
	B-310G	144-148 MHz	All	4 W	100 W	13.8 VDC	15 A	Yes	SO-239	3 lb
	B-1018G	144-148 MHz	All	10 W	160 W	13.8 VDC	25 A	10 dB	SO-239	5 lb
	B-2518G	144-148 MHz	All	25 W	160 W	13.8 VDC	25 A	10 dB	SO-239	5 lb
	B-5018G	144-148 MHz	All	50 W	160 W	13.8 VDC	24 A	Yes	SO-239	5 lb
ACOM	A1000	160-10 M + 6M	SSB, CW	60 W	1000 W	200-240 VAC	2000 VA	—	SO-239	48.5 lb
	A1010	160-10 M	SSB, CW	50 W	500 W	100/240 VAC	1200 VA	—	SO-239	39.7 lb
	A1200S	160-10 M + 6M	SSB, CW	40 W	1000 W	93/265 VAC	2000 VA		SO-239	26.5 lb
	A1500	160-10 M + 6M	SSB, CW	60 W	1200 W	100/240 VAC	3500 VA	—	SO-239	65 lb
	A2000	160-10 M	SSB, CW	50 W	1500 W	100/240 VAC	3500 VA	—	SO-239	96 lb
	A2100	160-10 M	SSB, CW	50 W	1500 W	100/240 VAC	3500 VA		SO-239	65 lb
PALSTAR	LA-1K	1.8-54 MHz	All	40-55 mW	1000 W SSB	110/260 VAC		—	SO-239	27 lb

Owner modifiable for 10m **Add 35 pounds. Transformer shipped separately. ***Add 12 pounds. Transformer shipped in separate package.

AMPLIFIERS

AMERITRON



Mobile Amp ALS-500M

500 W PEP / 400 W CW mobile amplifier with instant band switching, no tuning, no warm up. SWR / load fault / thermal overload protected. On / Off / Bypass switch. Remote on / off control capable. DC current meter with very quiet fan. 1.5-22 MHz (10/12 Meters with Mod-10 M option). Options include ALS-500RC remote head and SPS-75MV 110 VAC 75 A @13.8 VDC output power supply for using ALS-500M at home.



Low-Cost Desktop Amp AL-811H

800 watt PEP output. This low-cost desktop linear HF amplifier gives plenty of power to burst through QRM. It will plug right into a 120 VAC outlet. Four tough 811A transmitting tubes, heavy-duty power supply, all HF band coverage, operate / stand-by switch, transmit LED, plus more! UPS shippable. The AL-811 is similar but has three 811A tubes, 600 watts PEP output.

Accessories



Amp to Rig Interface ARB-704

Protects rig from damage by keying line transients and makes hooking up to your rig easy.

Stop Voltage Spikes ICP-120

Stops damaging in-rush current by absorbing high-voltage spikes. Works with nearly all linear amps.



No-Tune Amps



HF + 6, 1200 W Solid State Amplifier ALS-1306

Covers 1.5-54 MHz with 1200 watts PEP output. Features instant automatic band-switching, no tuning and no warm-up. It is SWR protected with quiet variable-speed cooling. Metering includes PEP FWD / REF, PA balance and ALC with a LED Indicator. There are front-panel band / error LEDs. Front-panel ALC control. The ALS-1306 has modular construction for easy servicing, and is powered by a 50 VDC switching power supply. This compact, operator-friendly and attractive desktop amplifier fits neatly into any station. Just 10 W x 6.5 H x 18.5 D inches and weighs only 22 lb.



ALS-1300

1200W solid state FET no-tune amplifier includes most of the features of the ALS-1306 but no auto band switching and no 6 meters.



ALS-600

No tuning, no fuss, no worries – just turn on and operate. 600 watts PEP / 500 W CW, 1.5-22 MHz, instant bandswitching, SWR protected. 120 / 220 VAC. 9-1/2 W x 6 H x 12 D inches. Includes matching transformer power supply.

ALS-600S ALS-600 with 10 pound switching power supply.

Legal Limit Amps



ALS-80B

1 kW PEP output from a compact, desktop linear that plugs into 120 VAC outlet. Classic 3-500ZG tube, inrush current protection, two year limited warranty.



AL-82

Full legal limit amplifier using a pair of 3-500ZG tubes. Super heavy duty Hypersil® power transformer allows the tubes to be used to their full potential. Two illuminated meters, including one specifically for monitoring grid current. 220 VAC. Ships in 3 boxes.



AL-1200

Full legal limit amplifier using ham radio's toughest tube, the 3CX1200/Z7. The super heavy duty power supply loafs at full legal power.



AL-1500

Ameritron's most powerful amplifier uses a 3CX1500/8877 ceramic tube. You get full legal power output from a whisper quiet desktop linear. You get all this power, plus, 65% efficiency, pi-network tuned input, Pi-Pi-L output, inrush current protection, multi-voltage transformer, QSK compatibility, and a one-year warranty.



ACOM 1000

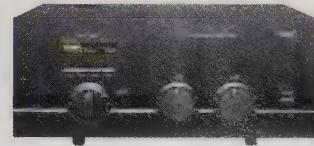
The ACOM 1000 HF Linear is the world's best value in an amateur HF amplifier. It gives you a comfortable 1000 watts output on all amateur bands from 160 through 6 meters.

- Frequency coverage: All amateur bands 1.8-54 MHz. MARS / CAP ready model.
- Power output: 1000 W PEP or continuous carrier, no mode limit.
- Intermodulation distortion: better than 35 dB below rated output.
- Hum and noise: Better than 40 dB below rated output.
- Harmonic output suppression: 1.8-29.7 MHz –better than 50 dB below rated output; 50-54 MHz; –better than 66 dB below rated output.
- Input and output impedances:
 - nominal value: 50 ohm unbalanced, UHF (SO239) type connectors;
 - input circuit: broadband, VSWR less than 1.3:1, 1.8-54 MHz continuously (no tuning, no switching);
 - bypass path VSWR less than 1.1:1, 1.8-54 MHz continuously;
 - output matching capability: better than VSWR 3:1 or greater at reduced output levels.
- RF gain: 12.5 dB typically, frequency response less than 1 dB (50 to 60 W drive power for rated output).
- Primary power: 170-264 V (200, 210, 220, 230 and 240 V nominal taps, 100, 110 & 120 V taps on request, +10%-15% tolerance), 50-60 Hz, single phase, 2000 VA consumption at rated output.
- Complies with CE safety and EMC requirements as well as FCC regulations (6,10 and 12m bands lock provided).
- Size & weight (operating):
 - WxDxH: 422 x 355 x 182 mm, 22 kg. (16.6 x 14 x 7.2 inches, 48.5 lb.)
- Operating environments:
 - temperature range: 0 - +50 degs. Celsius
 - humidity: up to 75% @ +35 degs. Celsius
 - height: up to 3000 m above sea level without output deterioration.



ACOM 1010

- Frequency coverage: all amateur bands in the 1.8-29.7 MHz frequency range; extensions and / or changes on request.
- Power output: 700 W PEP or 500 W continuous carrier.
- Intermodulation distortion: better than 35 dB below rated output.
- Hum and noise: better than 40 dB below rated output.
- Harmonic output suppression: better than 50 dB below rated output.
- Input and output impedances:
 - nominal value: 50 ohm unbalanced, UHF (SO239) type connectors;
 - input circuit: broadband, VSWR less than 1.3:1, 1.8-30 MHz continuously (no tuning, no switching);
 - bypass path VSWR less than 1.1:1, 1.8-30 MHz continuously, 200 W maximum;
 - output (antenna) impedance matching capability: VSWR up to 3:1 or higher.
- 50 to 70 W drive power for rated output.
- Primary power: 85-132 V / 170-264 VAC (100, 110, 120, 200, 210, 220, 230 and 240 V nominal taps), +10% -15% tolerance, 50-60 Hz, single phase, 1200 VA.
- Size and weight (operating): W x D x H: 406 x 315 x 150 mm, 18 kg. (16 x 12.4 x 5.9 inches, 39.7 lb.)
- Antenna matching can be achieved in less than 10 seconds and at a quarter of nominal output power, which produces lower risk of interference to other stations and greater safety to the amplifier components.



ACOM 2100

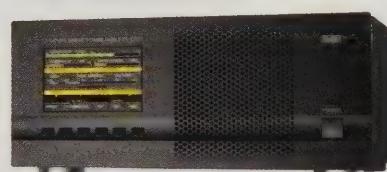
- Frequency coverage: All amateur bands 1.8-54 MHz, extensions and/or changes on request.
- Power Output: 1500 W PEP or continuous carrier, no mode limit.
- RF Gain: 13.5 dB typically, frequency response less than 1 dB (50-85 W drive power for rated output).
- Primary Power: 100-264 V (100, 110, 120, 200, 210, 220, 230 & 240 V nominal taps, +10% -15% tol.), 50-60 Hz, single phase, 3500 VA at rated output.
- Input and Output impedances of nominal value: 50 ohms unbalanced, UHF (SO239A) type connectors. Input circuit: broadband, VSWR less than 1.3:1, 1.8-54 MHz continuously (no tuning, no switching).
- Bypass path VSWR less than 1.1:1, 1.8-54 MHz continuously. Output (antenna) impedance matching capability: better than VSWR 3:1 or greater at reduced output levels. Number of Antenna Outputs: 3.



ACOM 2000



- RF output: 1500-2000 W keyed carrier or SSB
 - no time limit. Constant carrier modes 1500 W RF output
 - no time limit with aux cooling fan.
- Frequency coverage: All amateur bands 1.8-24.5 MHz. 28 MHz only with modification.
- Band change / tune up: initial output matching process in less than 3 seconds.
- Tuning memories: Non-volatile for up to 10 antennas per frequency segment.
- Drive power: typically 50 W for 1500 W out.
- Input impedance: 50 ohms nominal. VSWR <1.5:1.
- Output tolerance: up to 3:1 VSWR (2:1 on 160 m) at full rated output.
- T / R and keying: vacuum relay: QSK capable.
- Tubes and circuit: 4CX800A/GU74B tetrodes (2); resistive grid, PI-L output with RF negative feedback.
- ALC: negative going, grid derived, -11 v max.
- Metering: comprehensive. Remote control unit provides flexible monitoring of all amplifier parameters. PC interface (RS-232) plus remote phone line interrogation feature.
- No controls on RF unit except ON / OFF. RF unit may be located up to 3 meters (20m with optional cable) from RCU.



ACOM 1200S

- Power output: 1000 watts +/-0.5dB, PEP or continuous carrier (1200 watts typically).
- Frequency coverage: 1.8 to 54 MHz.
- Display: Five inch high resolution color display, 800x480 pixels and 24-bit colors.
- Compatible with all transceiver models available on the market.
- Broadband input circuit providing a perfect transceiver load with SWR below 1.2:1 (typically 1.1:1), without retuning.
- Remotely controlled by RS-232 interface.
- Input and output impedances: nominal value: 50 ohms unbalanced.

DC POWER ACCESSORIES

WEST MOUNTAIN
RADIO



Epic-H PWRgate

Epic-H PWRgate is a 12 volt uninterruptible power system that can supply up to 40 amps continuously from either a power supply or a Lead Acid/ Lithium battery with almost no voltage loss. It also charges the battery with its high performance charger. A separate solar panel input can be used to charge the battery directly from a solar panel with output less than 30 V. Horizontal configuration.

#58404-1795 HRO Price: \$189.95

Super PWRgate PG40s

12 volt uninterruptible power switch that can supply up to 40 amperes continuously from either a power supply or a battery, and can also charge the battery with its high performance charger. Connected equipment will instantly switch to battery during a power blackout or power supply failure. #58403-1046 HRO Price: \$139.95



ISOpwr Plus

ISOpwrPlus is a solid-state switch using a high powered FET. It turns on when the car's alternator is running and turns off when it is not. The switching point is 13.5 volts. PWRguard output shut-off when voltage is out of range. Safely handles 40 amperes and is protected with a 40 ampere ATC blade fuse. Includes three sets of Powerpole® connectors. USB port for setting operating thresholds and for monitoring. #58401-1044 HRO Price: \$114.95

DC-to-GO with 4007U & Super PWRgate PG40S



Super PWRgate provides easy-to-use portable DC Power. Takes Group 24 Size Battery (sold separately). It includes a RIGrunner 4007U (conveniently mounted to battery box) and Super PWRgate PG40S (conveniently mounted to battery box). Optimized for use with gelled & AGM type batteries, but will keep flooded lead acid and marine type batteries near full charge as well. Solid, durable aluminum construction includes mounting holes for convenient, secure use in mobile units. Uses Anderson Powerpole® connectors. #58513-1577 HRO Price: \$259.95

Provides display of voltage, current flow in either direction, wattage and amp-hours. Measures 0 V to 60 V (less than 8 V requires USB power to PWRcheck), 40

A continuous load. Accurate to within +/- 10 mV, +/- 10 mA. Resolution: 10 mV, 10 mA. Improved color touchscreen LCD displays data in digital, analog and bar graph formats. USB computer interface for configuration and log data download. Programmable alarm conditions for over-current, over / under voltage, amp hours. Uses Powerpole® connectors. #58430-1286 HRO Price: \$179.95

PWRcheck+



PWRguard Plus



TURNS OFF IF VOLTAGE EXCEEDS 15 VOLTS OR DROPS BELOW 11.0 VOLTS. TURNS BACK ON WHEN VOLTAGE IS IN SAFE OPERATING RANGE. MOMENTARY VOLTAGE DIPS BELOW

11.0 VOLTS ARE IGNORED TO PREVENT FALSE TRIPPING WHILE TRANSMITTING. RATED FOR 40 A MAXIMUM WHILE TRANSMITTING, 30 A CONTINUOUS DUTY. SOFT TURN-ON / TURN-OFF SOLID STATE SWITCH PROTECTS RADIO AND REDUCES INRUSH CURRENT – NO RELAY CONTACT BOUNCE! REMOTE ON / OFF CAPABILITY. INDICATOR LEDS AND AUDIBLE ALARM NOTIFY USER WHEN SAFETY SWITCH TURNS POWER OFF. USER MAY DISABLE BUZZER. USES ANDERSON POWERPOLE® CONNECTORS #58402-1045 HRO Price: \$114.95

RIGrunner Power Distribution Panels

RIGrunners are the most convenient and safest way to connect all your 12 volt equipment. Uses Anderson Powerpole® – ARES, RACES, RSGB standard. Polarized and color keyed. 40 amps total (8012 is 80 amps total). Outlets fused with assorted ATC / ATO automotive fuses. Blown fuse LED indicators. For home and mobile installations. 6-foot input cable, #10 AWG with 1/4-inch terminals. (#8 AWG for 8012). “Complete” versions include Powerpole® packs. Alternate voltage versions of RIGrunners (24-48 VDC) are available!



RIGrunner 4004U

40 amp, 4 outlets. 2 USB ports with 4 A charge. 6 pairs of 30 A Powerpole® sets. #58315-1043 HRO Price: \$84.95



RIGrunner 4005

40 amp and 5 outlets with 6 pairs of 30 A Powerpole® sets. #58312-1039 HRO Price: \$74.95



RIGrunner 4005H

40 amp and 5 outlets that are horizontal. 6 pairs of 30 A Powerpole® sets. #58312-1041 HRO Price: \$72.95



RIGrunner 4006U

Delivers up to 40 amps total through 6 outlets and includes a dual

USB socket for charging portable devices that need a USB socket for charging. Each port has an RFI protection capacitor. Each fuse has a blown LED. Each port uses high current Anderson Powerpole® connectors. #58320-1749 HRO Price: \$104.95



RIGrunner 4007U

40 amp continuous duty and 7 fused outlets. Automatic supply

voltage and load current measurement shown on a 3 x 7 segment display. Automatic shut off on high (HVD) or low voltage condition (LVD). Intelligent USB port for charging iPhone, Android and other USB devices. #58313-1561 HRO Price: \$169.95



RIGrunner 4008U

RIGrunner 4008 40 amp, 8 outlets. LED and audible alarms. 6 pairs of 30 A Powerpole® sets. #58307-1035 HRO Price: \$99.95



RIGrunner 4008H

RIGrunner 4008H 40 amp, 8 outlets horizontal. 12 pairs of 30 A Powerpole® sets. #58307-1037 HRO Price: \$94.95



RIGrunner 4010S+

RIGrunner 4010S+ 40 amp, 10 outlets. One master outlet and nine switched with LED and audible alarms. PWRguard shut off, internal USB port, remote access via USB port to turn on/off. Jumper for power saving mode. 12 pairs of 30 A Powerpole® sets. #58303-1601 HRO Price: \$169.95



RIGrunner 8012C

RIGrunner 8012C 80 amp, 12 outlets with LED & audible alarms. 12 pairs of 30 A Powerpole® sets. #58301-1028 HRO Price: \$179.95

POWER SUPPLIES



All of Astron's solid-state electronically regulated Power Supplies have fold-back current limiting to protect from excessive current, and a heavy duty heat sink. Output voltage: 13.8 VDC \pm 0.5 volts. 220 V supplies available on special order at slightly higher price. AP models have Anderson Powerpoles® connections.

RS-A Series Standard power supply with on / off switch. Adjust voltage internally.

SL Series Slim line design for low-profile looks.



RS-M-AP Series power supplies with front meters. One is for voltage and the other current. Now with Anderson Powerpoles®.

SS Series High efficiency switching supplies specially filtered for use with communications equipment for all frequencies including HF. Heavy duty design, low profile, light weight and EMI filter.

VS-M Series Variable power supplies with separate volt and amp meters. Adjustable output: 2-15 volts.

RM Series 19" x 5 1/4" rack-mount power supplies available with or without meters and may be variable. The RM-60 comes with or without meters.



DAIWA

Daiwa switching power supplies are one-third the weight and one-half the size of conventional supplies. Daiwa models can be used for DC motors that require peak starting currents and will accept input voltage from 90-130 V. Switching supplies can create pulse noise, but Daiwa engineers have isolated any noise and moved it out of the amateur bands creating a super quiet power supply.

Both models below have adjustable voltage 5-15 V, a built-in automatic cooling fan, a carry handle for portability, and are short-circuit protected.



**30 AMP
SS-330W**

- Dual meters, amp and voltage.
- Ripple voltage: less than 10 mV.
- 30 amps continuous current (33 peak).
- Weight: ONLY 4 lb 14 oz.
- Dimensions: 5" x 4" x 11" (approx).

HRO Price: \$169.95



**50 AMP
SS-505**

- 50 amps continuous current (55 peak).
- 50 amps available at all output voltages.
- Binding posts on back, cigarette-lighter socket, spring loaded connectors on front.
- Voltage fluctuation: less than 1.5%.
- Dual purpose meter – amp and voltage.
- Weight: ONLY 8 lb 4 oz.
- Dimensions: 8.5" x 4.3" x 11" (approx).
- Ripple voltage: less than 5 mV.

HRO Price: \$349.95

*AP models now with Anderson Powerpoles®

†Contains a backup battery module (220 volt versions of some models available at additional cost by special order. Contact HRO for details.)

POWER SUPPLIES

MFJ



MFJ-4128

Switching power supply delivers 28 A surge, 25 A continuous at 13.8 VDC. Selectable AC input voltage 85-135 and 170-260 VAC. 5-way binding posts, cigarette lighter socket, fan "on" LED indicator. 7 W x 2.25 H x 7.5 D and 4 lb.



MFJ-4215MV

15 amp switching power supply, 15A surge and 13A continuous. Variable 4-16 VDC with 1% voltage regulation. Backlighted volt / amp meters. 5-way binding posts for output. 5 W x 3.75 H x 7 D at 2.9 lb.



MFJ-4225MV

Similar to MFJ-4125 but adds large 3-inch amp, volt meters and a cigarette lighter plug. 5.25 W x 4.5 H x 6 D inches. Weighs 3.7 lb.

Transformer Supply



MFJ-4035MV

19.2 lb transformer delivers 35 A max, 30 A continuous. 1-14 VDC out, 110VAC in. Highly regulated, 1% load regulation. 5-way binding posts, quick connects. It is a transformer supply, not a switching supply.



MFJ-4235MV

Switching power supply gives 35 A surge, 30 A continuous. 4-16 VDC with 1% voltage regulation. AC input 90-125 or 200-240V. 7 W x 4.25 H x 8.75 D inches and 4 lb.



MFJ-4245MV

Similar to MFJ-4225 but handles 45 amp surge and 40 amp continuous. 7.5 W x 4.75 H x 9 D inches. Weighs just 5.5 lb.



MFJ-4275MV

75 amp switching power supply is great for powering your Ameritron ALS-500M amplifier. 75 A maximum and 70 A continuous. 110/220 VAC switchable. Highly regulated with load regulation better than 1%. Ripple voltage is less than 12mV peak-to-peak at rated load. No RF hash. Short-circuit, overload, and over temperature protection systems. Front panel adjustable voltage 4-16 VDC. Battery charging feature provides charging current of 20 A continuous, 30 mA trickle charge. 9.75 W x 5.5 H x 9.5 D inches.

24V Adjustable Output



MFJ-4218MV

Ham radio's only adjustable 0-24 VDC output switching power supply! 18 A at 13.8 VDC, 9 A at 24 VDC. Backlighted volt / amp meters, 5-way binding posts. LED load fault indicator. 6 W x 2.25 H x 6.75 D and 2.2 lb.



**MightyLite™
MFJ-4125**

Switching Power Supply. 25 amps surge, 22 amps continuous. No RF hash! Low ripple, highly regulated. Great review by QST magazine. Over-voltage and over-current protection circuits. Switchable AC input voltage, works from 85 to 135 VAC or 170 to 260 VAC. Replaceable fuse. Tiny 5.5 W x 2.5 H x 5.75 D inches. Weighs just 3.5 lb.

Powerpole® Ready



MFJ-4125P

This version available with 2 pair of Powerpoles® and 5-way binding posts on front panel, and quick connects on back.



MFJ-4115

Ultra-Compact 15 amp switching power supply weighs just 1.5 lb and is 3.75 W x 2.25 H x 7.75 D inches. Has over-voltage and over-current protection. 17 A surge, 15 A continuous.



MFJ-4230MV

30 amp switching power supply with switchable amp / volt meter. Super compact 5 W x 2-1/2 H x 6 D inches. 120 / 240 VAC switchable. Gives 25 amps continuous or 30 amps surge at 13.8 VDC. Front panel voltage adjustable 4 to 16 VDC. MFJ-4230MVP is similar to MFJ-4230MV but adds a pair of Powerpoles® on back.

INVERTERS/SOLAR



Samlex America®

For Base Stations



SEC-1212 & SEC-1223

The perfect lightweight companion for a 100 watt transceiver. SEC-1212 has the same form factor as SEC-1223.

- Switch Mode Design for minimal power loss.
- Highly efficient, light weight, and compact.
- Produces clean, consistent power with circuit innovations that minimize output voltage ripple and RFI.
- Works on 200 – 240 VAC input voltage with a simple jumper change.
- UL and FCC compliant.
- Safety features: over/under voltage protection and quiet cooling fan.
- Dimensions in inches: 7.3 x 8.2 x 2.3.

SEC-1223 - HRO Price: \$139.95

SEC-1212 - HRO Price: \$99.95



SEC-1235M

This unit includes built-in volt and amp meters and is the best power supply value.

- All features of above SEC-1212/1223 plus advanced switch-mode technology.
- Dimensions in inches: 7.3 x 8.4 x 2.3 WDH.

SEC-1235M - HRO Price: \$144.95

SEC-1223BBM

Samlex combines the reliability of the SEC-1223 power supply with the reassurance of the BBM-1225 battery backup module. This combined unit automatically provides uninterrupted DC power in the event of a power outage.

- All features of the above SEC-1212/1223 units plus reliable, uninterrupted DC power source in conjunction with an external battery.

SEC-1223BBM - HRO Price: \$149.95

Model	Input VAC	Out VDC	Amps Out Nominal	Amps Out Peak
SEC-1212	100-130	13.8	10	14
SEC-1223	100-130	13.8	23	25
SEC-1235	100-130	13.8	30	35
SEC-1223BBM	Preset 100/130	13.8	23	25

Samlex is **THE** power supply choice for radio manufacturers around the world. On the market for more than 25 years, these compact switching power supplies offer reliable power designed specifically for the land mobile radio market, at an affordable price. In addition to power supplies, Samlex provides a wide selection of inverters and solar power charging kits to outfit your ham shack.

SAMLEX POWER SUPPLIES CARRY A 3-YEAR WARRANTY

All-In-One Inverter/Charger



Perfect pure sine wave unit for emergency backup power for the "ham shack" in case of a major power outage. When you lose power, the EVO™ is programmed to switch to generator or battery/inverter mode to power your equipment. When the power comes back it automatically returns to grid power and charges your batteries for future use. Optional EVO-RV remote control.

- Configurable Multi-Stage high current battery charger with equalization – for safe and optimal charging of batteries, including Lithium.
- Fast transfer of <1 16ms from grid/generator to inverter for continuous power.
- Input for solar charger controller or other DC source.
- 3 Year Limited Warranty.

EVO-2212	EVO-3012	EVO-2224	EVO-4024
1200 W	3000 W	2200 W	4000 W
12 VDC	12 VDC	24 VDC	24 VDC
\$1394.95	\$1740.95	\$1394.95	\$1419.95

Battery Backup Modules



Visit/Call for Info.

Uninterrupted DC power in association with a power supply and battery. Provides instantaneous transfer of load between power supply and battery.

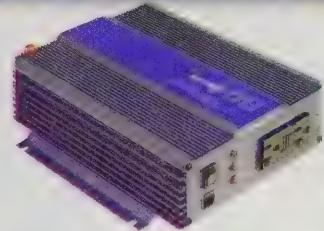
Radio Cabinets



Visit/Call for Info.

Integrate your mobile radio with any Samlex desktop switching power supply to create an attractive and functional desktop.

DC to AC Inverters



PST-150-12 150 Watt

PST-300-12 300 Watt

PST-600-12 600 Watt

The PST series provides clean pure sine wave power. PST's commercial grade design is suitable for heavy duty loads, long periods of continuous operation and reliable AC power.

- Quiet operation with temperature-controlled fan reduces energy consumption.
- Extremely low interference with other devices.
- Pre-set for 12 V input. GFCI protected outlets.
- Wide operating DC input range compatible with new high voltage alternators. Universal Protection Circuit: low voltage, over voltage, over temperature, over load and short circuit.
- Safety certified to UL & CSA standards, FCC compliant.
- 3 Year Limited Warranty.

Model	PST-150-12	PST-300-12	PST-600-12
Watts	150	300	600
Price	\$134.95	\$159.95	\$219.95

Solar Power



Portable Kits

MSK-90 90 Watt

MSK-135 135 Watt

Whether you need to charge your 12 V batteries during field emergencies or to get extended remote run-times for your equipment, always have the Samlex MSK Portable Solar Charging kit at your ready. Available in 90 and 135 watt models, these MSK kits include a built-in, three-stage 10 amp charge controller to protect batteries and prevent overcharging. Kits fold easily and compactly in a protective carry case for transport and storage and come with pre-wired battery clamps on a 16' cable. 10 year power warranty on solar panels (Canada/US).

POWER SUPPLIES/BATTERIES

**ALINCO**

Switching Power Supply DM-430T

Compact, lightweight design features 9-15 VDC variable output up to 20 amps continuous and 30 amps peak. The noise offset circuit lets you move any switching noise to another frequency. Features large illuminated digital volt / amp meter, rear panel (30 A peak) binding posts, front panel quick terminals (5 A), front panel Anderson Powerpole® (30 A), short circuit, over temperature, and current limiting protection. Front panel adjustable.



32 Amp Switching DM-330MVT

Super compact, lightweight power supply is great for portable operations. Provides 32 A peak, 30 A continuous. Variable output 5-15 VDC. Preset voltage function. Patent pending noise offset circuit removes pulse noise. Short circuit protection. Convenient front panel connections. Cigarette plug socket.



40 Amp Switching Mode DC Power Supply GZV4000

The GZV4000 switching mode DC power supply has a 40 amp continuous rating at 100% duty cycle. The supply has variable voltage from 5-15 VDC using a voltage control knob with a center detent at 13.5 VDC. There is overload and short circuit protection with current feedback at approximately 42 amps and temperature protection with a variable speed fan. An AC line filter gives EMI protection. The meter selector allows monitoring of voltage and current. Power and overload indicators included. Front panel DC terminals, a cigarette lighter jack, and an internal 8 ohm speaker. Operates on 120 VAC ± 20%, 50-60 Hz. Ripple and noise is less than 8 mV rms. 240 VAC models also available for GZV4000.

HRO Price: \$169.95

60 Amp GZV6000

60 amp version. 100V-240V
HRO Price: \$369.95

**Bioenno Power®**

Lithium Iron Phosphate Batteries

Bioenno Power's Lithium Iron Phosphate batteries are designed with ham radio applications in mind, and provide several key advantages:

- Based on advanced Lithium Iron Phosphate (LiFePO4) battery chemistry.
- Compatible with every brand (Icom, Kenwood, Yaesu, Elecraft, Alinco, etc.).
- Built-in protection-circuit-modules (PCM), which are "micro-computers" that internally balance cells and provide protection from overcharging, over-discharging, over-current, and short circuiting.
- 50% to 70% lighter than SLA (sealed lead acid) batteries.
- Service life of 2000+ charge cycles or 5-10+ years, with a shelf life that far exceeds the service life of many other batteries.
- Powerpole® connectors that are already attached and can connect directly to radios.
- Thermally and chemically stable.
- Dependable and reliable.

Based in Santa Ana, California, Bioenno Power products are currently used in a variety of applications and industries including ham radio, surveillance, avionics, scientific equipment, communications, audio/visual equipment, e-bikes/e-scooters, etc. with capacities ranging from 3 Ah up to 200 Ah.



BLF-1203W

12 Volt - 3 Ah LFP Battery

LiFePO4

HRO Price: \$49.95



BLF-1206A

12 Volt - 6 Ah LFP Battery

LiFePO4

HRO Price: \$79.95



BLF-1209A

12 Volt - 9 Ah LFP Battery

LiFePO4

HRO Price: \$99.95



BLF-1212A

12 Volt - 12 Ah LFP Battery

LiFePO4

HRO Price: \$124.95



BLF-1215A

12 Volt - 15Ah LFP Battery

LiFePO4

HRO Price: \$149.95



BLF-1220A

12 Volt - 20 Ah LFP Battery

LiFePO4

HRO Price: \$192.95

Please note that these batteries should be charged using a LiFePO4 compatible charger, and not with a charger for SLA batteries.

BATTERIES/CABLE ACCESSORIES

NiMH Rechargeables

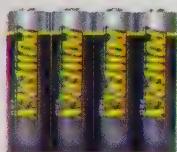


More than 25 Years Expert in Rechargeable Batteries and Chargers

Powerex MH-RAA 4 PRO

HRO Price: \$11.95

- Save up to \$1,500 over the lifespan of one battery.
- Powerex PRO AA 2700 mAh 4-pack.
- Low self-discharge batteries, optimized for high drain devices.
- 1.2 Volts (VDC), 2700 mAh capacity.



TOP RATED BATTERY

DC Meters



Wattmeter/Power Analyzer

MFJ-4424

High Precision Wattmeter / Power Analyzer displays amps, volts, and watts continuously from 4.8-60 V. Measure current, peak current, power and peak power. Input / output with Anderson Powerpoles®. Backlit LCD display. 3.25 W x 1.75 H inches.



Volt/Amp Panel Meter

MFJ-4422

4.5-30 VDC / 30 A digital volt / amp panel meter with built in Current Shunt. Connect inline to monitor voltage and current of your mobile radio or accessory. Displays voltage and current simultaneously with dual .28 inch red / blue LED digits. Input / output with Anderson Powerpoles®. Handles up to 30 A. Reverse polarity protected. 3 W x 2 H x 1 D inches.

Battery Analyzer

WEST MOUNTAIN RADIO

Computerized Battery Analyzer



CBA IV

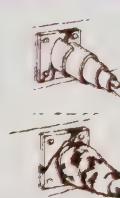
The CBA is much more than a simple battery voltage tester or a battery load tester. The CBA will test virtually any type or size of battery, any chemistry, any number of cells up to 55 volts. For the first time and for a reasonable price, anyone can do scientific tests of their batteries by letting their computer do all the work. The CBA is capable of higher test rates than other testers: up to 40 amps or 150 watts, whichever is higher. It not only tests the total amount of energy stored in a battery (capacity in amp-hrs), but it graphically displays and charts voltage versus amp hours. #58250-1014

HRO Price: \$174.95

Coax-Seal



Coax-Seal



Coax-Seal will seal all types of coax fittings, baluns, antenna parts and connectors of any shape. Wrap Coax-Seal around the object you want to protect and then mold it into shape. Keeps moisture out of the coax fitting on antenna feed lines. Need to make a change? Just remove it and start over.

Seals and protects all types of cable, wire and connectors from moisture and corrosion. Adheres to all cable and wire hardware and cable jackets. Offers years of protection from the effects of weather. Stays flexible, hot or cold; easy to remove.

HRO Price: \$3.99/ per roll

Cable Ties

It's a Wrap!

BongoTies™

Handy Ties for Cables and Other Unruly Items



BongoTies have hundreds of uses around the office, home, garage, studio, and industry. Stop and look at all of those messy wires behind your computer right now! Each pack has 10 BongoTies, so this offer is for a total of 40 BongoTies. Sturdy reclosable bags with zip-lock tops. BongoTies are approx. 5 in. in length, and stretch to approx. 18-20 in. (Not for outdoor use.)

HRO Price: \$6.99 for a bag of 10

Coax Wrap



CoaxWrap will provide your coax connections with outstanding protection from the weather. Just wrap the connection with the convenient roll. When you need access to the connection, the wrap removes easily. Available in red, white, blue, clear, and black.

HRO Price: \$6.40/ per roll

CABLE ASSEMBLIES/CONNECTORS

Cable Assemblies

CABLE X-PERTS

Ready-Made Coax Cable Assemblies

Model	Connector Both Ends	Burial	UV Resistant	Shields	Attenuation dB @ 100 ft	Best Freq.
CXP1318FC	PL-259	Yes	Yes	2 (100% bonded foil + 95% TC Braid) V/F 84%	50 MHz 1.1 150 MHz 1.9 450 MHz 3.3	50-450 MHz
CXP008C	PL-259	No	Yes	1 (95% BC Braid) V/F 78%	10 MHz 0.51 30 MHz 0.9 50 MHz 1.2	1-50 MHz
CXP1318FN	N	Yes	Yes	2 (100% bonded foil + 95% TC Braid) V/F 84%	150 MHz 1.9 450 MHz 3.3	150 MHz and higher
CXP08XC	PL-259	No	Yes	1 (95% BC Braid) V/F 78%	10 MHz 0.98 30 MHz 2.0	1-30 MHz
CXP213C	PL-259	Yes	Yes	1 (97% BC Braid) V/F 66%	10 MHz 0.62 30 MHz 1.2	1-30 MHz (High Power)

RG213/U with PL-259		
Part Number	Length (ft)	HRO Price
CXP213C100	100	\$104.95
CXP213C50	50	\$59.95
CXP213C6	6	\$21.95
CXP213C3	3	\$19.95
RG8/U Foam with PL-259		
CXP008C100	100	\$89.95
CXP008C50	50	\$54.95
CXP008C25	25	\$34.95
CXP008C12	12	\$21.95
CXP008C6	6	\$16.95
CXP008C3	3	\$15.95
RG8X-Mini with PL-259		
CXP08XC100	100	\$44.95
CXP08XC75	75	\$34.95
CXP08XC50	50	\$29.95
CXP08XC25	25	\$24.95
CXP08XC18	18	\$21.95
CXP08XC6	6	\$18.95
CXP08XC3	3	\$16.95

9913-Type Flexible with N-Connector		
Part Number	Length (ft)	HRO Price
CXP1318FN150	150	\$169.95
CXP1318FN100	100	\$119.95
CXP1318FN50	50	\$59.95
CXP1318FN25	25	\$44.95
CXP1318FN6	6	\$26.95
CXP1318FN3	3	\$20.95
9913-Type Flexible with UHF Connectors		
CXP1318FC100	100	\$119.95
CXP1318FC50	50	\$64.95
CXP1318FC6	6	\$21.95
CXP1318FC3	3	\$18.95
Tinned Copper Ground Braid		
235	1" wide	\$1.89/ft
2332	1/2" wide	\$0.89/ft
235RT-5	1" 5' long *	\$14.95
235RT-10	1" 10' long *	\$19.95
2332RT-5	1/2" 5' long	\$12.95
2332RT-10	1/2" 10' long *	\$15.95

*With ring terminals

Connectors (Contact HRO for others)

Model	Description	HRO Price
BNC-44	BNC to UHF Adapter	\$5.99
N-31	N to UHF Adapter	\$9.99
PL-259ST	PL-259	\$2.69
N-TGS	Type N Male	\$6.99
UHF-08-TGNZ	4 Hole SO-239 Chassis Connector	\$4.99
UHF-10	Double Male UHF	\$5.99

Model	Description	HRO Price
UHF-11	UHF Barrel	\$4.99
UG-363-4	Long UHF-UHF Barrel	\$16.95
UHF-15-DGN	Right Angle Teflon Gold Pin	\$7.95
UHF-13	UHF "T"	\$5.99
UHF-19	BNC to UHF Adapter	\$6.99
UHF-18	UHF to N Adapter	\$8.99

Cable Times

Call for Low Discount Prices on Times Cable

LMR-200 - RG58 type

This is a standard RG58 'type' outdoor cable that is ideal for jumper assemblies, short antenna feeder runs, or any application requiring an easily routed, low loss RF cable. It has a solid BC inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 83%. It will withstand 1000VDC, a peak power of 2.5 kW, and shielding effectiveness is >90 dB.

LMR-240 - RG8X type

This RG8X 'type' outdoor cable has a solid BC inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 84%. It will withstand 1500 VDC, a peak power of 5.6 kW, and shielding effectiveness is >90 dB.

LMR-400 - RG8/213 type

This is a standard RG8 / RG213 'type' outdoor cable that has a solid BCCA inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 85%. It will withstand 2500 VDC, a peak power of 16 kW, and shielding effectiveness is >90 dB.

LMR-400-UltraFlex

Similar specs as LMR-400 with TPE jacket.

Coax & Connectors



Andrew coax and all the matching connectors you will need are available as a special order drop shipment. Contact your nearest HRO store for complete details.

MODEL CABLE TYPE DIAMETER
AVA5-50FX..... Foam Dielectric 7/8"
FSJ4-50B..... Superflex 1/2"

*Plus Shipping

We have RF Cable available from



DAVIS RF JSC
Times Microwave

Coax

Purchase coax in any length up to 500 ft

RG8/U

Standard RG8 /U, #13 stranded copper center conductor, cellular polyethylene insulation, 97% bare copper shield, PVC jacket, 50 ohm impedance, 78% velocity factor and 1.8 dB loss per 100' at 100 MHz. The most popular cable for HF/VHF/UHF. Use when long cable runs are not required.

RG213/U

RG-213 / U coax, #13 stranded copper center conductor, solid polyethylene insulation, 97% bare copper shield, non-contaminating PVC jacket, 50 ohm impedance, 66% velocity factor and 2.2 dB loss per 100' at 100 MHz. This RG-8 type cable is best for HF. It may be buried.

9913F-7

9913F-7 is RG8/U-type coax, #9.5 stranded copper conductor, foam polyethylene insulation, 100% foil plus 88% braid shield, PVC jacket, 50 ohm impedance, 84% velocity factor and 1.4 dB loss per 100' at 100 MHz. The best cable for VHF and UHF applications.

RG8X

RG8X is small diameter coax, #16 stranded copper center conductor, cellular polyethylene insulation, 95% bare copper shield, PVC jacket, 50 ohm impedance, 78% velocity factor and 3.7 dB loss per 100' at 100 MHz. Good for short VHF runs and most HF uses.

Rotator Cable

8 wire, standard duty - 8 wire cable using six #22 and two #18 tinned copper conductors. PVC insulation.

8 wire, heavy duty - 8 wire cable using 6 - #18 and 2 - #16 tinned copper conductors. PVC insulation; chrome PVC jacket.

When Ordering Bulk/Roll Cable

Please order in multiples of 50 feet. Continuous length spools up to 500 feet are available. Call for quotes.



American Built & Reliable

ABR Industries manufacturers coax with a non-contaminating, ultraviolet resistant, and direct burial jacket. Cables are American Made and are fully tested and ready to use.

Direct Bury Cable

218XATC - lightweight for mobile, dipole antennas, or jumpers between equipment in tight places. RG8X (LMR®240 type) with PL-259 connectors and adhesive lined HST at both ends. Jacket is UV resistant and direct burial.

RG8X-Direct Bury with PL-259

218XATC-PL-1.5	1.5	\$16.95
218XATC-PL-3	3	\$18.95
218XATC-PL-6	6	\$19.95
218XATC-PL-9	9	\$21.95
218XATC-PL-12	12	\$24.95
218XATC-PL-18	18	\$26.95
218XATC-PL-25	25	\$29.95
218XATC-PL-30	30	\$32.95
218XATC-PL-40	40	\$35.95
218XATC-PL-50	50	\$37.95
218XATC-PL-75	75	\$44.95
218XATC-PL-100	100	\$54.95
218XATC-PL-125	125	\$69.95
218XATC-PL-150	150	\$79.95
218XATC-PL-250	250	\$129.95

HT Jumpers

ABR Industries now supplies HT jumpers in various short lengths of RG316/U Teflon® .100" OD.

These can be had in 3, 6, 9, 12, and 15 foot lengths of SMA male to SMA female, or 3 and 6 foot lengths of SMA male at both ends, or SMA male to PL259 or SO239.

Ground Braid

Also available are various lengths of 1-inch or ½-inch tinned copper flat ground braid with ¼-inch stud ring terminals

And there are a few different lengths of ½-inch tinned copper with nickel grommets at 4" spacing for easy attachment to a vehicle body or truck bed to create a "ground plane" or an option as a buss-bar in the shack.

Direct Bury Cable

2213A - UV resistant, direct bury. RG213/U Mil-Spec w/PL259 connectors and adhesive lined HST at both ends. Solid polyethylene dielectric, high power, bands below 30MHz with amplifiers.

RG213/U with PL-259

Part Number	Length (feet)	HRO Price
2213A-PL-1.5	1.5	\$18.95
2213A-PL-3	3	\$21.95
2213A-PL-6	6	\$23.95
2213A-PL-18	18	\$39.95
2213A-PL-25	25	\$44.95
2213A-PL-50	50	\$69.95
2213A-PL-75	75	\$96.95
2213A-PL-100	100	\$124.95
2213A-PL-150	150	\$179.95

25400F - (LMR® 400UF) UV resistant, direct-bury, for frequencies above 144 MHz. PL-259 connectors and adhesive lined HST at both ends.

RG8/U Direct Bury with PL-259

25400F-PL-1.5	1.5	\$18.95
25400F-PL-3	3	\$21.95
25400F-PL-6	6	\$24.95
25400F-PL-12	12	\$27.95
25400F-PL-18	18	\$31.95
25400F-PL-25	25	\$44.95
25400F-PL-50	50	\$69.95
25400F-PL-75	75	\$97.95
25400F-PL-100	100	\$119.95
25400F-PL-150	150	\$174.95

25400F - (LMR® 400UF) UV resistant, direct-bury, for frequencies above 144 MHz. N male connectors and adhesive lined HST both ends.

RG8/U Direct Bury with N Male

25400F-NM-3	3	\$24.95
25400F-NM-6	6	\$29.95
25400F-NM-12	12	\$35.95
25400F-NM-18	18	\$39.95
25400F-NM-25	25	\$49.95
25400F-NM-35	35	\$57.95
25400F-NM-50	50	\$78.95
25400F-NM-75	75	\$106.95
25400F-NM-100	100	\$129.95
25400F-NM-150	150	\$184.95

ANTENNA TUNERS



and wide Z range. Palstar's AT5K, like its AT4K little brother, has a T-matching network utilizing a 1:1 unbalanced-to-balanced transformer at the INPUT of the network.

- 3500 watts single tone, high efficiency, low tuner losses and wide Z range.
- 160m to 15m with limited Z range on 10m.
- Balanced output with high power 5 kW Teflon® wire balun at the input of tuner circuit.
- Ferrite 1:1 input balun.
- Custom, large plate variable capacitors (600 pF @ 6 kV).



peak-hold; a resonant free roller system; new LED lit meter system; and a new compact size.

- Power rating 2000 watts PEP.
- Frequency tuning 160m to 6m.
- Impedance matching range 20 ohms to 1200 ohms.
- Easy and quick tuning with only two controls.
- Palstar designed ceramic body roller inductor.
- 6 position mode switch for multiple antennas.
- Meter power range 0-300 watts / 0-3000 watts.
- Active peak and peak hold dual



meter coverage. Newly designed capacitors feature lower minimum capacitance for improved high band performance, while maximum capacitance has been increased to 400 pF for better low band performance.

- Power rating 2000 watts PEP.
- Impedance range 20 to 1500 ohm 160m to 10m (assuming resistive load).
- Low minimum custom variable capacitors (15 pF to 400 pF at 4.5 kV).
- 10 μ H relay-switched add-on inductor for 160 meters, roller inductor with turns counter.
- 18 μ H 5 kV ceramic body roller

Antenna Tuner AT-5K

The AT5K takes power handling to the next level over the AT4K, coming in with a rating of 3500 watts single tone continuous performance with low losses

- 10 amp 7 kV CERAMIC 3.25" body roller inductor (35 μ H) wound with 10 ga. plated solid copper wire.
- Six-position switchable antenna input switch with 7 kV, 10 amp contacts.
- Peak and peak hold dual cross-needle metering (1-2 sec hold) with backlighting.
- Fan cooling for extended 100% duty cycle operation.

Antenna Tuner AT2KD

The AT1500DT and the AT1K have been combined into a new 2 kW tuner. The AT2K has all our features such as: peak and continuously; new LED lit meter system; and a new compact size.

- cross-needle metering (1-2 sec hold) with LED backlighting.
- Differential capacitor tuning with 2 stators and 1 rotor (420 pF - 13 pF - 420 pF @ 5 kV).
- High power ferrite 1:1 or 4:1 current balun (optional) externally installed.
- Size: 12 1/2" W x 5 1/2" H x 16" D.
- Weight: 12 lb.

Antenna Tuner AT-2K

The smaller roller inductor allows the AT-2K to tune 6 meters, while a relay-switched toroid adds the extra inductance needed for 160

- inductor with turns counter.
- Silver plated inductor wheel shaft and contact wheel.
- Active peak / peak hold cross-needle metering w/ backlighting.
- 6 position ceramic wafer antenna selector switch.
- Optional 1:1 or 4:1 current balun available.

**Designed By Hams for Hams.
Made in the USA!**



Antenna Tuner AT4K

The AT4K has a power rating of 2500 watts single tone continuous.

- Unbalanced / balanced output (switch activated on front panel) with high power balun at the input of tuner circuit.
- T match circuit: impedance matching range 8 - 2000 ohms.
- Custom large value (460 pF) variable capacitors at 6 kV.
- Switchable antenna inputs.
- 10 amp edge-wound silver plated ceramic body roller inductors crank handle driven.
- Ferrite 1:1 input balun.
- Peak / peak hold dual cross-needle metering (1-2 sec hold) with backlight.
- Size: 15" H x 7" W x 16" D
- Weight: 20 lb.



Antenna Tuner AT-500

Covering 160 to 6 meters, the AT-500 has a differential tuning capacitor with 2 stators and 1 rotor, a precision ceramic body

roller inductor, and a 4:1 ferrite current balun for balanced line feeds.

- Power rating: 600 watts PEP SSB; 500 watts CW.
- Output to both balanced and unbalanced lines.
- Impedance matching range 20 ohms to 1500 ohms.
- 6 position mode switch for multiple antennas.
- Active crossneedle peak/peak hold metering with backlighting.
- Meter power range 0-300 watts / 0-1000 watts.
- Differential capacitor tuning with 2 stators and 1 rotor (360 pF - 14 pF - 360 pF @ 2.5 kV).

Palstar Products

Model	Description	Price
LA-1K	1KW solid state amplifier	\$3,795.95
AT-5K	1500 W Antenna Tuner	\$1,549.95
AT4K	3500 W Antenna Tuner	\$1,259.95
AT4K	2500 W Antenna Tuner	\$949.95
BT1500A	1500 W Balanced Antenna Tuner	\$779.95
AT2K	2000 W Antenna Tuner	\$584.95
AT2KD	2000 W Differential Antenna Tuner	\$584.95
AT500	600 W Antenna Tuner	\$489.95
Wattmeters		
PM2000A	2000 W Wattmeter 1.8 MHz to 60 MHz	\$198.95
PM2000AM	200 W Wattmeter mobile 1.8 MHz to 60 MHz	\$198.95
Shortwave Accessories		
SP30B	Speaker 12 watts (for R30C/CC)	\$124.95
Dummy Loads		
DL1500	Dummy Load 1500 W - 450 MHz	\$194.95
DL2.5KHP	Dummy Load 2500 W - 1.8-60 MHz meter	\$695.95
Baluns		
B4000N 4:1	Balun 4/1 4000 W-Current-Hi-Z	\$99.95
B4000N 1:1	Balun 1/1 4000 W-Current-Low-Z	\$89.95

Remote Antenna Tuners

Smartuners™ are the most versatile and reliable antenna couplers available. Working with power levels from 1.5 to 500 watts and with frequency ranges spanning the HF bands from a single antenna, they provide all-purpose tuning ideal for base, mobile, or portable operation. Just provide 12 V, connect to transceiver, antenna, and ground, and get on the air with minimum SWR. For more info just visit sgcworld.com for a detailed review of the Smartuner family, and find the right one for your needs. Stop tuning, start talking.

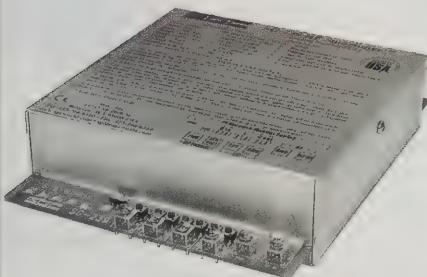
The Original Smartuner™

SG-230
\$499.95

The SG-230 Smartuner™ was the first product in the HF market to offer fast, flexible tuning without any user interface. It is built in a rugged, factory sealed ABS enclosure. With this tuner and any single antenna, you will have continuous coverage from 1.8 to 30 MHz and it can be used with any transceiver you'll ever own. The SG-230 can be used in base station, mobile, marine and aviation applications, and has been the "Gold Standard" of automatic antenna tuning for more than a decade. #54-14

The Budget Smartuner™

SG-239
\$224.95



Get quality performance from a low cost package. The SG-239 will operate from 1.8 to 30 MHz with 1.5 to 200 W. Like all Smartuners™, it gives you the most flexibility because it will work with any antenna and any transceiver. It also has push buttons for a manual tune option. It weighs only 2 pounds, so you can use it for base or portable. #54-22



HF Antenna Coupler

SG-235
\$1149.95



This fully automatic coupler for 500 watts will tune an antenna at least 23 feet long for the HF bands. The SG-235 automatically evaluates and switches 64 input and 32 output capacitor combinations plus 256 inductance combinations in a Pi network design. The tuner remembers the chosen frequency plus the tuning values and automatically reselects those values when transmitting on or near that same frequency. #54-15

SGC Smartrunners

Specifications	SG-230	SG-235	SG-237	SG-239
PEP Input (W)	3-200	3-500	3-100	1.5-200
CW Max Input (W)	80	200	40	80
Frequency (MHz)	1.8-30	1.8-30	1.8-60	1.8-30
Input Current (A)	0.9	1.4	0.3	0.23
Antenna Length (<3.3 MHz)	8 ft	50 ft	8 ft	40 ft
Antenna Length (>3.3 MHz)	23 ft	300 ft	28 ft	100 ft
Dimensions (in)	16x12x3	16x12x3	7x6x1.5	7.5x6x2
Weight (lb)	8	8	2	2
Water Resistant	yes	yes	yes	no
HRO Price	\$499.95	\$1,149.95	\$389.95	\$224.95

The General Purpose Smartuner™

SG-237
\$389.95

The SG-237 is the most popular Smartuner™. Its rugged construction and small size allow for maximum flexibility. It has a 100 W power rating and expanded coverage to 60 MHz, matching it perfectly with the most popular HF + 6m transceivers. It will work with any balanced or unbalanced antenna including whips, backstays, dipoles, loops and long wires. #54-18



Mobile Tuner

WEST MOUNTAIN RADIO 



TARGETuner
\$234.95

TARGETuner mobile antenna management system provides a controller with intelligent automatic controls for the tunable mobile screwdriver antenna, and a remote RF module. #58425-1473

- Senses RF signal into the antenna.
- No radio data link required for band selection; Auto tuning.
- Direction switch and motor control of speed and direction.
- Programmable for stall current sensing.
- Easy programming and memory capabilities.

ANTENNA TUNERS

LDG
Electronics

Transceiver Matching



Z-817 Automatic Tuner for the Yaesu FT-817

The Z-817 automatic tuner, operating on 160 – 6 meters, attaches to the CAT port with the

provided cable. Press the One-Touch-Tune button on the tuner and the Z-817 sets mode and power on the radio, tunes, then restores mode and power. Tuning time is 0.2 seconds for recalling one of its 2000 memories, and average time for a full cycle is 2.5 seconds. The Z-817 also works with any QRP radio with output of up to 20 watts. Press the tune button on the tuner while transmitting a carrier and it finds a match. Includes one foot CAT interface cable. Has CAT-thru port to allow computer control of radio. Tuning range of SWR loads from 6 to 450 ohms. It is powered by four AA batteries (not included). Size is 4.5" W x 4.5" H x 1.5" D. **HRO Price: \$119.95**

YT-1200 Desktop Tuner for Yaesu Transceivers

The LDG YT-1200 is an automatic tuner intended for use with popular Yaesu transceivers including the FT-450(D), FT-950, FT-991(A), FTDX-1200 and FTDX-3000. The IC-450 interface cable is included. *May not work with all firmware versions. The YT-1200 communicates with the radio via its CAT port at any baud rate to control the tuning cycle. The radio's Tuner port powers the tuner, so it requires no external power supply. The YT-1200 handles up to 125 watts SSB or CW, 100 watts on 6 meters or 30 watts on a digital mode.

The YT-1200 operates automatically, beginning a tuning cycle whenever the user presses the tune button on the tuner. It also features LDG's advanced memory tuning, providing 2,000 memory locations; when tuning near a previously used frequency it will recall the settings for nearly instant tuning. It learns your favorite frequencies and bands as you use it. You can also start a tuning cycle manually whenever necessary. **HRO Price: \$219.95**



IT-100 Especially for Icom Radios

The ideal tuner for IC-7300 and other Icom radios covers all frequencies from 1.8 – 54 MHz and will automatically match your antenna in a flash. Tunes 1 to 125 watts SSB, CW and digital modes. Has a front panel push button for manual or automatic tune plus a status LED. Tune with the IT-100 or use your radio. Includes more than 2,000 memories. Uses latching relays. Tuning range is 4 – 800 ohms, powered by your radio. Includes Icom interface cable. **HRO Price: \$164.95**

For Most Modern HF Transceivers

Z-100A

Plug & Play Operation



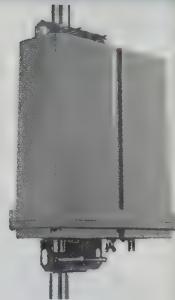
The Z-100A features LDG's famous 10:1 SWR tuning range that matches Dipoles, Verticals, Endfed wires, G5RVs or even an Off-center fed Windham. Easy integration means plug and play operation; installation could not be simpler. The Z-100A tuner goes anywhere with your HF radio... desktop, portable, parks, islands, or tall summits. **HRO Price: \$179.95**

- Frequency Range: 1.8 - 54 MHz.
- Power: 125 W PEP, 30 W Digital.
- Input Impedance: 50 ohms.
- Tuning Range: 10:1 SWR.
- Memories: 2000.
- Retune Time: < 1.0 Seconds.
- Voltage: 13.8 VDC +/- 15%.
- Current Draw: 500 mA tuning, 20 mA idle.
- Size: 6.3" x 6.3" x 1.5"
- Weight: 1.5 lb.

Remote Tuners



RT-600 & RC-600



Automatic Antenna Tuner/ Remote Control

The RT-600 is a 600 watt PEP coax in / coax out remote tuner designed to be placed near the feedpoint of the antenna. If you are worried about power or signal loss due to SWR in your feedline, the RT-600 is the answer. Place the RT-600 near the feedpoint and it will virtually eliminate all feedline loss due to SWR. DC powered over the coax by the RC-600 control unit (included).

- 2000 memories for instantaneous band changing.
- 1.8 to 54.0 MHz coverage. Built-in frequency sensor.
- For dipoles, verticals, Vs, beams, or any coax-fed antennas.
- Optional external balun allows tuning of random length, long wire, or ladder line fed antennas.

HRO Price: \$419.95



RT-100 & RC-100



Automatic Antenna Tuner/ Remote Control

Place this 100 watt coax-in / coax-out tuner near the feed-point of the antenna and it will virtually eliminate all feed line loss due to SWR. The RT-100 is DC powered over the coax, so no extra cables are needed. Add your own DC injection circuit or use the LDG RC-100 to power and control the tuner from your shack.

The RC-100 will provide DC power over the coax as well as control for auto mode, lock, and tune. **HRO Price: \$229.95**



Tune Multiple Antennas



AT-1000ProII

The AT-1000ProII features an auto mode that automatically starts a tuning cycle any time the SWR exceeds a limit you set. Tune two antennas and switch between them. 2000 memories store tuning parameters for each antenna. The unit operates at any power level between 5 and 1000 watts peak RF input. A large, easy-to-read LED bar graph has two selectable ranges. It will tune from 1.8 to 54 MHz matching a wide range of antennas.

HRO Price: \$499.55



AT-100ProII

This automatic desktop tuner covers 1.8 – 54 MHz. A two-position antenna switch allows you to switch instantly between two antennas. The AT-100ProII requires just 1 watt for operation, but will handle up to 125 watts, making it suitable for everything from QRP to a typical 100 watt transceiver. It includes more than 2,000 memories for each antenna, automatically storing tuning configurations for each frequency and band as you use them. Includes antenna and bypass indicators on front panel.

HRO Price: \$199.55



AT-600ProII

The AT-600ProII will handle up to 600 watts SSB and CW, 300 on RTTY (1.8 – 30 MHz), 250 watts on 54 MHz.

- Processor-controlled switched L-tuner.
- Matches coax-fed antennas. Matches 10:1 SWR down to 1.5: 1.
- Use with longwires, random wires, and antennas fed with ladder line by adding an optional balun.
- Two antenna ports.
- Requires 11-16 VDC at 750 mA.

HRO Price: \$319.95

All LDG products come with a two (2) year transferable warranty.

Low-Cost Tuner



Z-100Plus/IC-705

Now IC-705 Ready!

Designed to provide 125 watt power handling in SSB, CW and digital modes, the Z100 Plus features 2000 memories that store both frequency and tuning parameters. Operating frequencies are stored with tuning parameters to make memory tunes in a fast 0.1 seconds. Full tunes take an average of only 6 seconds. Now includes 4 AA heavy duty batteries, Stereo interface cable, and BNC to PL-259 coax cable. **HRO Price: \$149.95**

Portable Tuner



Z-11ProII

Now includes battery pack!

Here is everything you need in a small, portable tuner designed for battery operation. Only 5" W x 7.7" D x 1.5" H and weighing 1.5 pounds, it handles 0.1 to 125 watts, making it ideal for both QRP and standard 100-watt transceivers from 160 – 6 meters. With 8,000 memories, the Z-11 Pro II uses a state-of-the-art processor-controlled switched-L tuning network. It matches dipoles, verticals, inverted-Vs or virtually any coax-fed antenna. With an optional LDG balun, it will also match longwires or antennas fed with ladder-line.

HRO Price: \$164.95

High Power Tuner



AT-200ProII

The AT-200ProII handles up to 250 watts SSB or CW on 1.8 – 30 MHz, and 100 watts on 54 MHz (including 6 Meters). Rugged and easy-to-read LED bar graphs show power and SWR. A function key on the front panel allows you to access data such as mode and status. An LED indicates bypass mode and another shows which antenna is selected. **HRO Price: \$239.95**

ANTENNA TUNERS

MFJ

HF Roller Inductor

**MFJ-962D**

Handles 1.5 kW PEP SSB amplifier input power (800 W output). Peak-reading cross-needle SWR / Wattmeter, AirCore™ roller inductor.

**MFJ-969**

Covers 6 thru 160 meters! 300 watts PEP SSB. TrueActive™ peak-reading SWR / wattmeter, antenna switch, built-in dummy load, 4:1 balun, Lexan® front panel. 3-1/2" H x 10-1/2" W x 9-1/2" D.

**MFJ-989D**

The world's most popular legal limit antenna tuner! Easily handles 1500 watts SSB / CW, 1.8 to 30 MHz including MARS / WARC bands. 500 pF air variable capacitors, AirCore™ roller inductor with fast-tune crank knob, TrueActive™ peak-reading cross-needle SWR / Wattmeter, high voltage current balun, more! 12-7/8" W x 6" H x 11-5/8" D.

**MFJ-986**

Similar to MFJ-989D, but "D" has 2-knob tuning (differential capacitor and AirCore™ roller inductor) to make tuning fool-proof and easier than ever.

HF Switched Inductor Tuners

**MFJ-904H**

MFJ brings you the world's smallest full power 150 watt 80-10 meter antenna tuner. Covers 3.5 to 30 MHz – with 4:1 balun and SWR / Wattmeter! Extra wide matching range lets you tune nearly any antenna. It is no toy! Built with real air variable capacitors (600 volt, 322 pF) and three stacked powder iron toroids to handle real power – not just QRP. Bypass switch lets you bypass tuner when you don't need it. You can use nearly any transceiver at full power with nearly any coax fed or random wire antenna for portable, home, or mobile operation. SO-239 connector. 7-1/4" W x 2-1/4" H x 2-3/4" D.

**MFJ-902B**

Tiny Travel Tuner, 4-1/2" W x 2-1/4" H x 3" D, full 150 W, 80-10 meters, tuner bypass switch.

**MFJ-901B**

Wide range 200 watt PEP versa tuner. Covers 1.8 to 30 MHz.

Manual Tuners

**MFJ-906 / 903**

6 meter tuners. MFJ-906 has lighted cross-needle SWR / Wattmeter with bypass switch. Handles 100 W FM/ 200 W SSB. MFJ-903 is without SWR/Wattmeter and bypass switch.

**MFJ-921 / 924**

VHF / UHF Tuners. MFJ-921 covers 144 / 220 MHz. MFJ-924 covers 440 MHz. Both include SWR / Wattmeter. 8" W x 2.5" H x 3" D.

**MFJ-949E**

More hams use MFJ-949s than any other antenna tuner! 300 watts, 1.8 to 30 MHz, custom inductor switch, 1000 volt tuning caps, full size peak / average lighted cross-needle SWR / Wattmeter, 8 position antenna switch, dummy load, scratch proof Lexan® front panel. 3-1/2" H x 10-5/8" W x 7" D.

**MFJ-948**

Economy version of MFJ-949E, less dummy load, Lexan® front.

**MFJ-945E**

HF / 6 meter mobile tuner. Extends mobile antenna bandwidth. Tiny 8" x 2" x 6" fits easily in car.

**MFJ-941E**

Super value tuner handles 300 watts PEP, covers 1.8-30 MHz, lighted cross-needle SWR / Wattmeter, 8-position antenna switch, 4:1 balun, 1000 volt capacitors.

**MFJ-931**

Artificial RF Ground. Creates artificial RF ground or electrically places far-away RF ground directly at rig. Includes 300 W tuner with cross-needle SWR / Wattmeter.

**MFJ-971**

Portable / QRP tuner tunes coax, balanced line, random wire 1.8-30 MHz. 30 / 300 or 6 watt ranges. Matches MFJ QRP rigs. 6" W x 6-1/2" D x 2-1/2" H.

ANTENNA TUNERS/COAX SWITCHES

MFJ



MFJ-993B

300 watt automatic HF antenna tuner is like the MFJ-929, but you can select 300 watts (6-1600 ohms matching range) or 150 watts (6-3200 ohms matching range). Also has 4:1 current balun, remote control port.



MFJ-994B

600 watt Intelli-Tuner™. Like MFJ-993B, but has 10,000 VirtualAntenna™ memories and handles 600 watts CW / SSB, matches 12-800 ohms. Does not have LCD display, antenna switch or 4:1 balun.



MFJ-998

1500 watt SSB / CW Intelli-Tuner™. Digital and analog SWR / Wattmeter, ultra-fast, automatic tuning, wide range (12-1600 ohms from 1.8 to 30 MHz), radio interfaces, built-in antenna switch for two coax / long wire, automatic bypass to protect your amplifier, field upgradeable software. MFJ-998RT with MFJ-4117 bias-tee also available for remote use.



MFJ-991B

First dual-power level Automatic Tuner: 300 watt / 6-1600 ohms, 150 watt / 6-3200 ohms. 10,000 virtual antenna memories. Cross-needle SWR / Wattmeter.

Random Wire Tuner

MFJ-16010

Random wire tuner. Operate all bands anywhere with MFJ's reversible L-network. 1.8-30 MHz. 200 W PEP. Tiny at 2" W x 3" H x 4" D. Turns a random wire into a powerful transmitting antenna.

Automatic Tuners



MFJ-939I/K/Y

From 2 to 200 watts automatic antenna tuner. Plug and Play for ICOM, Yaesu, Alinco and other HF rigs. Has 20,000 memories, covers 1.8-30MHz, powered by transceiver and includes interface cable. Requires adjustment of internal jumper and cable for specific radio. Audio SWR meter, small size, instant recall and fast tuning.



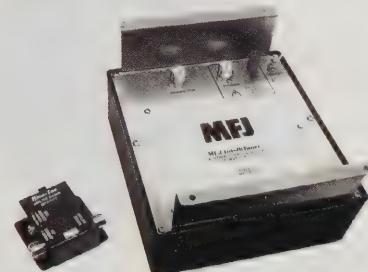
MFJ-929

200 watt automatic HF antenna tuner in a compact size 6-1/2" W x 2-7/8" H x 8-3/8" D inches. Ultra-fast, 20,000 VirtualAntenna™ Memories, antenna switch, efficient L-network, matches 6-1600 ohms, 1.8-30 MHz. Digital SWR / Wattmeter, radio interface.



MFJ-926B

200 watt HF remote automatic tuner. Matches random wire or coax feed. Fully weather sealed for remote outdoor/marine use. Includes MFJ-4117 bias-tee.



MFJ-927

Weather protected, fully automatic remote auto tuner for wire and coax antennas. 200 watts, powers through coax, no separate power cable needed.

Surge Protector

MFJ-270



Safeguard your expensive gear from static electricity and lightning induced surges traveling on 50 ohm coaxial line. Ultrafast gas discharge tube safely shunts up to 5000 amps of peak impulse current harmlessly to an independent ground. SWR less than 1.1:1. Less than 0.1 dB loss. Use up to 1000 MHz. Handles 400 W PEP.

MFJ-270N has low loss N-connectors.
MFJ-272 with SO-239s, handles 1.5 kW PEP.

HF Antenna Switches



MFJ-1702C

2 position antenna coax switch. New center ground, lightning arrestor. 2.5 kW PEP, 1 kW CW. Loss below .2 dB. 50 dB isolation @ 450 MHz. 50 ohms. 3" x 2" x 3".



MFJ-1704

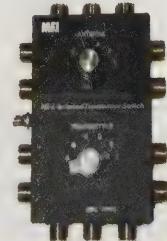
Like MFJ-1702C. 4 positions. 6.25" W x 4.25" D x 1.25" H. 50 ohm load. SWR 1.1: 1 to 30 MHz; 1.5: 1, 30-650 MHz. SO-239 connectors.



MFJ-1701

6 position antenna switch, 50-75 ohms. Handles 2 kW PEP or 1 kW CW. 1.8-30 MHz. SO-239 connectors. Unused positions automatically grounded.

MFJ-1700C



6 position antenna and transceiver switch switches between 1-6 antennas and 1-6 rigs. Handles 2 kW PEP or 1 kW CW, 1.8 to 30 MHz.

LIGHTNING PROTECTION/COAX SWITCH

Lightning Protected Coax Switches

ALPHA DELTA



4 Position Switch Delta-4B

This lightning protected 4 position RF coax switch uses the Alpha Delta ARC-PLUG® cartridge to protect your equipment from electrical surges. The exclusive center "off" (ground) position internally disconnects and grounds all antenna circuits. It has cast housing with constant impedance micro-strip cavity construction. Features a positive detent roller bearing switch drive. Handles full legal power. Delta-4/N for type "N" connectors. The Delta-4 handles frequencies through 500 MHz and the Delta-4/N through 1.3 GHz. **HRO Price: \$94.95; Type N: \$99.95.**



2 Position Switch Delta-2B

This 2 position coax switch has the same features as the Delta-4. Order UHF, or type "N" connectors for low-loss performance through 1.3 GHz. **HRO Price: \$74.95; Type N: \$84.95.**

Antenna Selector Console Desktop Coax Switch

This series retains all the features and specifications of the precision **DELTA-4B** series, including ARC-PLUG® module surge protection, in a desk top console that will sit right next to the equipment on your desk without having to be secured or bolted down. The console features a powder-coated steel housing and a solid brass ground buss, with #10 wire attachment hardware across the rear of the housing providing a common ground point for all station equipment and accessories.



Model ASC-4B Antenna Selector Console Switch (4 position, UHF Connectors thru 500 MHz). **HRO Price: \$154.95**

Model ASC-4B/N Antenna Selector Console Switch (4 position, N Connectors thru 1.3 GHz). **HRO Price: \$159.95**

ALPHA DELTA



The ATT3G50 coaxial surge protector was designed for the cellular, microwave point-to-point, and the broadband wireless industry. These products feature very low loss performance through 3 GHz for 50N models and 500 MHz for 50U models. Typical loss is 0.1 dB at 1 GHz through 0.5 dB at 3 GHz. This series represents the lowest loss broadband design in the industry. Choose connector: type "N" (50N models) or "UHF" (50U models).

The Defense Logistic Agency (DLA) has assigned National Stock Number (NSN) 01 5470278 to the Model TT3G50 Coax Surge Protector and NSN 5325 01 5466841 to the 3G50 ARC-PLUG® Cartridge for use in all US Military and NATO applications, worldwide.

ATT3G 50N	200 W – 3.0 GHz, Type N.....	\$59.95
ATT3G 50NHP	2 kW – 3.0 GHz, Type N.....	\$59.95
ATT3G 50U	200 W – 500 MHz, UHF	\$49.95
ATT3G 50UHP	2 kW – 500 MHz, UHF.....	\$49.95

HF Antenna Switches



DAIWA



CS-201

2 Position Coax Switch

DIAMOND ANTENNA

2 Position Coax Switch



CX-210A

Daiwa has two heavy-duty coaxial switches. Both are usable to 500 MHz and the unused positions are grounded. Switches are available at slightly higher prices with type "N" connectors.

HRO Price \$32.95

Diamond's heavy-duty wideband coax switch, the CX-210A, is a high quality 2 position coax switch with SO-239 connections. Like most Diamond products, this switch is very well built and durable. Two screws on the back allow you to mount the switch to a flat surface. **HRO Discount Price: \$49.95**

Ground Clamp



Model UCGC

The UCGC clamp mounts directly on a standard 5/8" copper ground rod. You can attach up to 4 Model ATT 3G50 series coax surge protectors. The ground clamp is made from solid copper and has stainless steel mounting hardware with 6 bolts, washers, and nuts. It includes an adjustable copper ground wire clamp for your station single point ground wire of up to 4 gauge in size. **HRO Price: \$49.95**

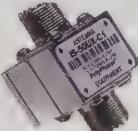
LIGHTNING PROTECTION/BALUNS

Lightning Protection

PolyPhaser® CORPORATION

Coaxial Impulse Suppressors

Hermetically-sealed voltage sensitive gas tubes and other components assure that surge voltages and currents will not reach your equipment.



Flange Mounts

HRO Price:
\$68.95-\$73.95

MODEL	FREQ RANGE	MAX POWER
IS-50 UX-CO	1.5-700	HF - 2kW VHF - 375 W UHF - 125 W
IS-50 NX-CO	1.5-700	HF - 2kW VHF - 375 W UHF - 125 W
IS-50 NX-C2 w/N Connectors	125-220 220 - 700 700 - 1 GHz	VHF - 375 W UHF - 125 W SHF - 50 W

Bulkhead Mounts

HRO Price: \$69.95
Type-N HRO Price: \$79.95



MODEL	FREQ RANGE	MAX POWER
IS-B50 LU-CO-ME	1.5-400	HF - 2kW VHF - 375 W UHF - 125 W
IS-B50 HN-CO w/N Connectors	1.5-700	HF - 3kW VHF - 500 W UHF - 200 W

Rotator Control Protector Model IS-RCT

Provides protection for rotator controllers, motors, control box, and other nearby equipment. Call for info.

Power Line Extension Protector

Two-outlet extension cords with master on/off switch and circuit breaker.

MODEL	LENGTH	PRICE
IS-PLDO-120-15A	15'	CALL
IS-PLDO-120-20A	6'	CALL

Grounding Panel Model CU-SPGP

A .062" thick copper plate mounted on a painted 1/2" plywood backing. Mounting protectors and a single ground point established for station equipment. Comes with concrete anchors, all mounting screws, 10' of 1.5" copper grounding strap, 2 brass sandwich plates, and joint compound. 18" x 12".

Baluns



LDG Electronics

200 watts
1.8 to 30 MHz

RBA-4:1 Remote 4:1 Balun \$29.95
RBA-1:1 Remote 1:1 Balun \$29.95
RU-1:1 Remote 1:1 Unun \$29.95
RU-4:1 Remote 4:1 Unun \$29.95
RU-9:1 Remote 9:1 Unun \$29.95

Radiowavz

The Radiowavz baluns are designed to handle full legal power with a low SWR.



1:1 Air B11a \$29.95
1:1 Ferrite B11f \$39.95
1:1 Isolation B11i \$39.95
1:4 Voltage Air B14va \$42.95
1:4 Voltage Ferrite B14vf \$42.95
1:4 Current Air B14ca \$42.95
1:4 Current Ferrite B15cf \$52.95
1:6 Current Isolation B16ci \$53.95
1:9 Balun Isolation TX B19tx \$42.95

Insulators

MFJ Mid Feed Point Ladder Line Insulator MFJ-16F01

The MFJ-16F01 is an extra strong fiberglass ladder line middle insulator. It contains a high strength coax connector at the midpoint, an SO-239, and features quadruple weave-through ladder line for stress relief. HRO Price: \$15.95



ALPHA DELTA



Delta-C

Dipole kit with center insulator with SEP static suppressor and 2 end insulators, no wire.
HRO Discount Price: \$29.95

PALOMAR ENGINEERS®



CB-4-1500TS

The CB-4-1500TS balun is a 4:1 impedance transformer designed to step down balanced ladder line feed point impedances of 600-50 ohms to 150-16.7 ohms unbalanced coax at 1500 watts PEP from 1.8 to 61 MHz. HRO Price: \$89.95



CB-1-5000EB

The CB-1-5000EB current balun is used for dipole antennas to keep RF on the antenna and off the outside of the coax braid. Rated 5000 watts PEP from 1-61 MHz. HRO Price: \$99.95



CMNF-500-50

Common mode coax noise filter rated at 500 watts PEP from 1-61 MHz with common mode attenuation up to 38 dB. Not effective for noise from AC power lines or noise received directly by antenna.
HRO Price: \$59.95



CU-1-5000SO

The CU-1-5000SO is a high power unun used as a line isolator or feedline choke. SO-239 in/out connectors. Rated 5 kW PEP 1.8-61 MHz. If you run RTTY contests or digital modes at 1500 W output, this is the unun you need for high duty cycles.
HRO Price: \$99.95



CU-4-9-1200

Model CU-4-9-1200 is a 4:1 and a 9:1 Ruthroff unun with one side stud for 4:1 (200:50Ω), a top stud/eyebolt for 9:1 (450:50Ω) output, and a side stud for ground connection. Input power levels up to 1.2 kW PEP when used with a matched load. A great multipurpose unun for end fed non-resonant antennas, traveling wave verticals, etc.
HRO Price: \$99.95

RFI SOLUTIONS/VERTICAL ANTENNAS



Transceiver/Amplifier Kits



These RFI kits effectively suppress transmitter RFI and reduce common mode receiver noise. Quick installation - immediate RFI reduction.

No radio mods required – works on all brands.

Part#	Desc	HRO Price
RFI-XCVR-STD	Single antenna port radio	\$39.95
RFI-XCVR-DELUXE	Multi-antenna port radio	\$89.95
RFI-LA-GAC	AC powered linear amps	\$54.95

Electronic Device RFI Kits

Part#	Desc	HRO Price
RFI-WW-10	Wall wart noise filter	\$29.95
RFI-HTS	Audio/video home theater	\$69.95
RFI-COMPUTER	Laptop or desktop	\$49.95
RFI-SMPS	Switch mode power supply	\$29.95

Ferrite Combo/Bulk Kits



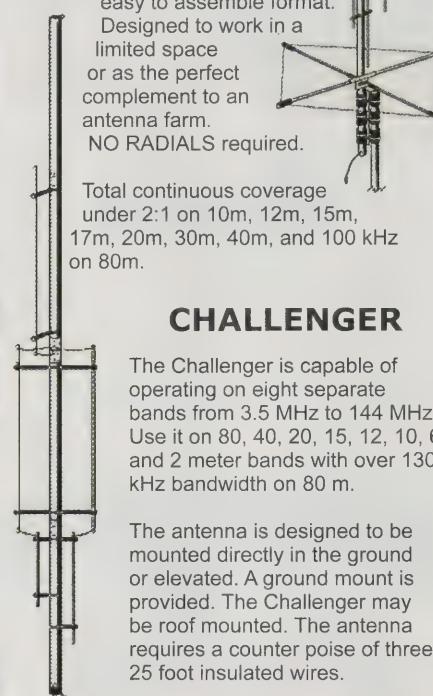
Part#	Desc	HRO Price
FSB31-1/2-10	1/2" Snap on Qty: 10	\$59.95
F240-31-10	1.4" ID Ring Qty: 10	\$89.95
FSCP-31-22	1/4, 3/8, 1/2, 3/4 Snap on	\$94.95
FMSCP-31-10	1/4, 1/2, 3/4 Snap On	\$49.95
MRSCP-31-17	3/8, 1/2, 3/4 Snap On +1.4" ID Ring	\$94.95
FRCP-240-10	31-(4), 61-(3), 75-(3) Ring	\$94.95



TITAN DX

The Titan is a center fed GAP vertical that provides a host of benefits in a rugged, yet manageable form. The Titan offers broad, continuous frequency coverage in a no-tune, easy to assemble format. Designed to work in a limited space or as the perfect complement to an antenna farm. NO RADIALS required.

Total continuous coverage under 2:1 on 10m, 12m, 15m, 17m, 20m, 30m, 40m, and 100 kHz on 80m.



CHALLENGER

The Challenger is capable of operating on eight separate bands from 3.5 MHz to 144 MHz. Use it on 80, 40, 20, 15, 12, 10, 6 and 2 meter bands with over 130 kHz bandwidth on 80 m.

The antenna is designed to be mounted directly in the ground or elevated. A ground mount is provided. The Challenger may be roof mounted. The antenna requires a counter poise of three 25 foot insulated wires.

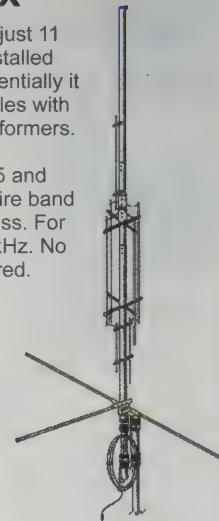
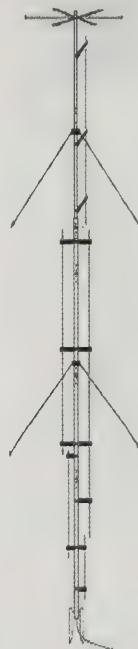
Gap Products

Model	Bands	Bandwidth (under 2:1)	Height (ft)	Weight (lb)	Mount	Counter Poise	Ground Area Required
Challenger	80, 40, 20, 15, 12, 10, 6, 2m	Entire band except 130 kHz 80m	31.5	18	Ground or elevated. Ground mount supplied	3 at 25'	10' x 12'
Voyager DX	160, 80, 40, 20m	Entire band except 900 kHz 160m	45	30	Ground. Aluminum pivot and guy brackets supplied	3 at 57'	4 guy points 25 ft from base
Eagle DX	40, 20, 17, 15, 12, 10m	Entire band except 500 kHz 10m	21	11	Most anywhere. Pole mount supplied for 1.25 antenna mast	3 rigid at 80" long	
Titan DX	80, 40, 30, 20, 17, 15, 12, 10m	Entire band except 100 kHz 80m	25	25	Most anywhere. Pole mount supplied for 1.25 antenna mast	4 rigid at 80" long	

EAGLE DX

The Eagle DX weighs just 11 pounds and can be installed almost anywhere. Essentially it is a set of vertical dipoles with no traps, coils or transformers.

It covers 40, 20, 17, 15 and 10 meters with the entire band at a VSWR of 2:1 or less. For 10 meters this is 500 kHz. No antenna tuner is required.



VOYAGER DX

The Voyager DX is manufactured specifically to provide efficient low band operation from the typical backyard without a huge investment in time, money, or space.

It is not another "add a kit" antenna for 160m. GAP technology opens up the low bands. Emphasis was given to 160m and 80m when designing the Voyager.

The antenna employs a capacity hat with circular ring to reduce the physical height to 45 feet while maintaining an electrical height of 66 feet. Parallel tuner rods are used in its design. No tuning or matching are required to put the Voyager on the air.

RadioWavz

MODEL	PRICE
G5RV Jr.	\$59.95
G5RV Lite-E	\$99.95
G5RV-E	\$84.95
G5RV MAX-E	\$134.95



Double Bazooka

FREQ....MODEL	PRICE
30 m.....80DBZ	\$94.95
75 m.....75DBZ	\$89.95
40 m.....40DBZ	\$72.95
20 m.....20DBZ	\$46.95
17 m.....17DBZ	\$44.95
15 m.....15DBZ	\$39.95
10 m.....10DBZ	\$44.95
6 m.....6 DBZ	\$42.95
2 m.....2DBZ	\$42.95

Portable HF



CHAMELEON™ ANTENNA EM-COMM II

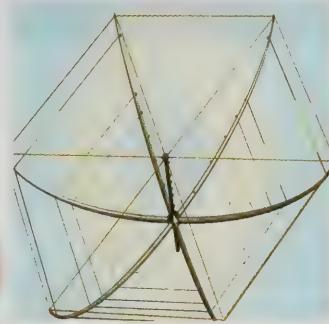
For backup emergency HF system or permanent installation. Contains an integral broadband impedance matching network (transformer 5:1) allowing broadband antenna tuning. It is the perfect backup antenna for apartments, condominiums, homeowners associations, deed restrictions, and CCRs, ARES, RACES, MARS, EMCOMM, NVIS, first responders, and especially for emergency preparedness.

Totally waterproof, the antenna is 30' long and covers 6m to 160m. An external tuner is required. It weighs 1 pound and has an SO-239 RF connection.

The antenna will perform as a sloper or in an inverted "V" configuration. For an NVIS configuration (40m - 80m) the antenna must be installed horizontally with the ground and elevated between 9' and 12' high. It does not require any ground-plane but will perform better with one. A ground terminal is available.

Dipoles with 1:1 Balun		
80 m	80DP11	\$69.95
40 m	40DP11	\$59.95
20 m	20DP11	\$49.95
10 m	10DP11	\$44.95

DX (OCF) Windom		
DX 40	DX40	\$69.95
DX 80	DX80MSH	\$119.95



HEX Beams

Sentinel Series Feature:

- Single coax feed (except for Barrett and Broadband options).
- Low SWR.
- No tuning; just plug and play.
- Improved broad band response over original hex beam design.
- Performs well at lower heights.
- Handles full legal limit of power.
- Small physical foot print.
- Light enough for a push up mast.
- Symmetrical shape withstands wind better.

Sentinel Models:

Sentinel Barrett Series Hex Beam
160-10m or 40-6m.

Sentinel Hex Beam 6 bands
10, 12, 15, 17, 20, and 40m.

Sentinel Hex Beam 10 m & 6 m
Dual band.

Sentinel Hex Beam 4-band
Covers 20, 15, 10, and 6m.

Sentinel Hex Beam 20m
Single band antenna.

Sentinel Hex Beam 10m
Single band antenna.

Sentinel Hex Beam 6m
Single band antenna.

BUCKMASTER

HF OCF Antennas

Off Center Fed (OCF) Antennas

Worldwide DX, multiband, and no tuner required.



4-BAND: 40, 20, 10, & 6 meters
68 feet (23+45) long.

DX-OCF-40.....300 W\$236.95
DX-OCF-HP40.....3 kW\$342.95

7-BAND: 80/75, 40, 20, 17, 12, 10, & 6 meters
135 feet (45+90) long.

DX-OCF.....300 W\$241.95
DX-OCF-HP.....3 kW\$349.95

8-BAND: 160, 80/75, 40, 20, 17, 12, 10, & 6 meters
270 Feet (90+180) long.

DX-OCF-160.....300 W\$317.95
DX-OCF-HP160.....3 kW\$422.95

ALPHA DELTA

Limited Space Antennas

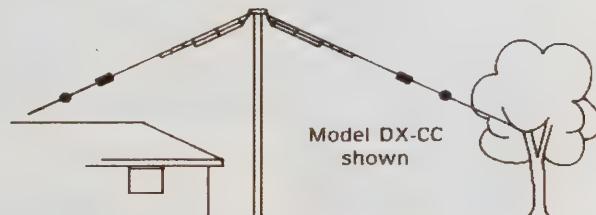
All of Alpha Delta's limited space antennas use stainless steel hardware where required, are fully assembled, and are manufactured to withstand severe weather. SO-239 connectors. The DX-A and DX-B slopers must be attached to a tower with an HF size beam on top to be a "capacity hat" for proper tuning. Power Rating: 1000 watts CW/PEP.

Model DX-B is a single wire, high performance quarter-wave sloper antenna for 160, 80, 40 & 30 meters. For limited space, the antenna requires only 60 feet for installation. Use with a wide range antenna tuner. Pre-assembled and pre-tuned. Has stainless steel hardware, 12 gauge insulated solid copper wire and the Alpha Delta "ISO-RES" RF choke coils, 50 ohm coax feed.

HRO Price: \$119.95

Model DX-A: Quarter wave twin sloper for 160-80-40 meters. One leg is 67'; the other 55'. Installs as an inverted-V.

HRO Price: \$99.95



Model DX-CC: A no trap 80-40-20-15-10 meter dipole. 82' long.
HRO Price: \$159.95

Model DX-DD: A no trap 80-40 meter dipole. 82' long.
HRO Price: \$139.95

Model DX-EE: A no trap 40-20-15-10 meter dipole. Only 40' long.
HRO Price: \$149.95

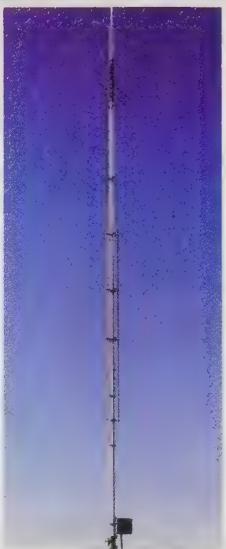
ANTENNAS

hy-gain

HF + 6m Verticals

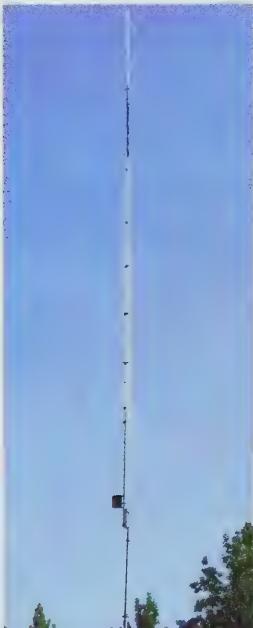
AV-640

Uses quarter wave stubs on 6, 10, 12, and 17 meters and efficient end loading coil and capacity hats on 15, 20, 30, and 40 meters. No radials. No traps. No ground. No tuning. Handles 1500 watts. Sleek, low profile. Small area required for mounting. Automatic bandswitching, single coax cable feed, each band is individually tunable, wide VSWR bandwidth.



AV-620

Covers all bands 6 through 20 meters.



AV-680

No ground or radials needed. 6-80m, 26 ft tall, 18.5 lb. 1500 W key down for two minutes. $\frac{1}{4}$ wave stubs on 6, 10, 12, and 17m. Wide, low SWR bandwidth. Auto band switching. Low 2.9 sq ft wind surface, mounts on decks, roofs, patios. 65 mph wind survival.

All Hy-Gain multi-band vertical antennas are entirely self-supporting. No guying required. Their extremely low angle of radiation and omni-directional patterns offer remarkable DX performance. All handle 1500W PEP SSB and have low SWR. All except the AV-18VS have automatic band switching, and all except the AV-18HT include a 12-inch heavy duty mast support bracket. Radiators are heavy duty, slotted, tapered swaged, aircraft aluminum tubing with full circumference compression clamps. All include all stainless steel hardware. Recessed SO-239 prevents moisture damage. Two year limited warranty.

HF + 160

AV-18HT

The famous Hy-Gain HyTower, 53 ft tall, 114 lb, covers 10-80m with 160m and 17m optional. Automatic band selection uses unique stub-decoupling. 250 KHz 80m bandwidth with 2:1 SWR. LC-160Q optional base loading coil for 160m and MK-17 optional 17m kit. Special tilt-over hinged base for easy raising and lowering.

10-80 m + 160 m Optional DX-88

10-80m with 160m optional, 25 ft tall, 18 lb. All bands are easily tuned with exclusive adjustable capacitors. 80 / 40m tunable from ground without lowering antenna. Super heavy-duty construction. Options include Kit-160-88 for 160 meter add-on, GRK-88 ground radial system, and RRK-88 roof radial system.



HF Verticals

DX-77A

10-40m, 29 ft tall, 25 lb. No ground radials required. Off-center-fed Windom has 55% greater bandwidth than competitive verticals. Heavy-duty tiltable base. Each band independently tunable.

AV-18VS

Covers 80 through 10m continuously. Easily change bands by manually moving band change wire at base loading coil. Handles 1500 W PEP. 18 ft tapered 6063-T6 aircraft aluminum tubing strength. 4 lb. Stainless steel hardware. 80 mph wind survival.



AV-12AVQ

10-15-20m, 13 ft tall, 9 lb. Automatic band switching, self supporting. 1500 W, Hy-Q™ traps give full $\frac{1}{4}$ wave performance with broad banding top hat. SWR less than 2:1. Ground or roof mount; requires radials.



AV-14AVQ

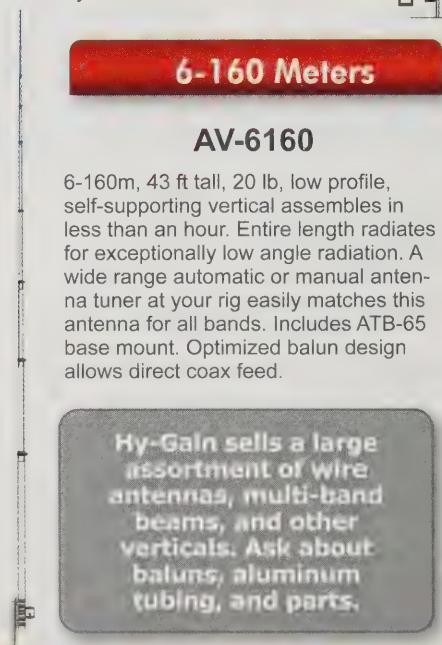
10-40m, 18 ft tall, 9 lb, 1500 W PEP. Auto band switching. Ground or roof mount. Requires radials. Heavy duty bracket with recessed SO-239 mounts on 1.5-1.625" diameter mast. Optional MK-80, 80m add-on kit, and AV-14RMQ roof mount kit. AV-12AVQ 13 ft 3-band version also available.

6-160 Meters

AV-6160

6-160m, 43 ft tall, 20 lb, low profile, self-supporting vertical assemblies in less than an hour. Entire length radiates for exceptionally low angle radiation. A wide range automatic or manual antenna tuner at your rig easily matches this antenna for all bands. Includes ATB-65 base mount. Optimized balun design allows direct coax feed.

Hy-Gain sells a large assortment of wire antennas, multi-band beams, and other verticals. Ask about baluns, aluminum tubing, and parts.



DX-77A / AV-18VS / AV-12AVQ / AV-14AVQ

MFJ

End Fed Horizontal Wire Antennas MFJ-1982

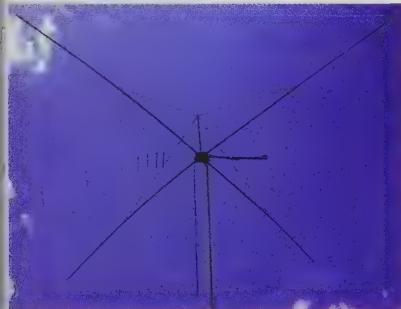


End-fed radiators have the unique quality of resonating on the 1/2-wave fundamental frequency plus odd / even harmonics above! Broadband matching transformer at feed point lets the entire HF spectrum be yours! SWR is so low you may never need a tuner.

Installation is fast for home, road, emergencies – just one high center or end support. Toss your EFHW over a high limb for an inverted-V, raise the far end

high for a powerful sloper, or even go vertical with an inverted-L. Comes with a rugged insulated wire radiator that prevents detuning when in contact with limbs/branches. "No-snag" end insulator slides over branches and through foliage. Dark jacketed wire is virtually invisible. Don't let antenna restrictions keep you off the air! Power ratings are in watts PEP for SSB / CW modes, with 50% or less transmit time (ICAS).

MFJ-1982LP \$59.95	30 W QRP	80-10 Meters
MFJ-1984LP \$49.95	30 W QRP	40-10 Meters
MFJ-1982MP \$79.95	300 W Restricted space	80-10 Meters
MFJ-1984MP \$69.95	300 W Restricted space	40-10 Meters
MFJ-1982HP \$99.95	800 W High power	80-10 Meters
MFJ-1984HP \$89.95	800 W High power	40-10 Meters



1/2 Wave 6-Band HF Cobweb Antenna MFJ-1836

Restricted space spoiling your operating fun? MFJ Cobweb puts your call back on the map! This six-band (20, 17, 15, 12, 10, 6 meters) full half-wave Cobweb Antenna is perfect for restricted space or portable operation. Sky-gray fiberglass spreaders and nearly invisible wire elements (flat 9 x 9 x 1/2 feet square; 8 pounds) blend in with your surroundings while standing tough against nasty weather.

Outstanding performance! Horizontally polarized for less local noise pickup plus solid gain over verticals will allow you to work DX easily – even on QRP. Omni-directional. No radials needed! Works great at low heights. Low SWR is due to MFJ's exclusive Spider-Match™ broadband network. Use lightweight TV hardware to mount on your chimney, balcony, mast. Low in cost, but big on performance.

MFJ-1836 HRO Price: \$249.95

MFJ-1836H legal limit model. HRO Price: \$279.95

MFJ-1836HK34 adds 30 / 40 meters. HRO Price: \$139.95

40-6 Meter Cobweb Super Heavy-Duty Antenna MFJ-1838

The new, super heavy-duty 40-6 meter Cobweb Antenna, MFJ-1838, is built to survive harsh northern winters, heavy snow, ice and strong winds. It has super-strong large-diameter fiberglass and heavy-duty 14 gauge stranded hard copper wire. 8-bands: 40, 30, 20, 17, 15, 12, 10, 6 Meters, 1500 watts. 12 feet, 23 lb.

HRO Price: \$419.95

Hexbeam Antennas MFJ-1846 MFJ-1848



1500 watt Hexbeam delivers solid gain and directivity on 20, 17, 15, 12, 10, and 6 meters in a low-profile package that will have your pocket-book and your neighbors smiling!

The MFJ-1846 uses an updated G3TXQ element configuration for excellent gain, improved bandwidth, superior front-to-back ratio and low SWR - makes snagging rare DX easy! That's just the beginning! MFJ takes the Hexbeam's unique balanced-tension framework to a new level with rugged mounting hardware, exceptionally durable spreaders and sliding antenna-wire guides.

All designed to ensure years of reliable service in tough weather conditions. Gain and directivity makes the difference when DXing or maintaining schedules and the Hexbeam delivers!

MFJ-1846 Specifications:

- Gain: 5.3 dBi in free space (more over ground).
- Front-to-back Ratio: 15-20 dB
- Typical turning radius: 11 ft.
- Maximum mast size: 2-1/16" OD.
- Weight: 25 lb.
- Wind loading surface: 3.5 square feet.

HRO Price \$499.95

MFJ-1848 Specifications:

- 8-Bands: 40, 30, 20, 17, 15, 12, 10, 6 meters.
- 40 and 30 meters are each one-element radiators.
- 1500 watts.
- 14 ft turning radius.
- Weight: 28 lb.

HRO Price: \$719.95



2 Elements on 20, 17, 15, 12, 10, 6 m MA-6B



Cushcraft's latest MA-6B gives you 2-elements on six bands! You get solid signal-boosting directivity in a bantam-size and weight.

Mount on your roof or mast using standard TV hardware. It's perfect for exploring exciting DX without the high cost and heavy lifting of installing a large tower and full-sized array. Its

7-foot 3-inch boom has a turning radius less than 9 feet. Contest tough and handles 1500 watts.

The unique MA-6B is a two-element Yagi on 20 / 17 / 15 / 12 / 10 / 6 meters. It delivers solid power-multiplying gain over a dipole on all bands. You get automatic band switching and a super easy installation in a compact 26 pound package. When working DX, what really matters are the interfering signals and noise you don't hear. That's where the MA-6B's impressive side rejection and front-to-back ratio really shines. HRO Price: \$719.95

MA-5B Like MA-6B but five bands: 20, 17, 15, 12, 10 meters. 12 and 17 meters is a single element trapped dipole. HRO Price: \$499.95

ANTENNAS

MFJ**HF Antennas****HF Whips****MFJ-16XXT**

HF antenna whips handle 250 watts PEP. Whips are about 7 feet fully extended and collapse to about 4 feet for easy storage. Simply screws into any 3/8 x 24 female mount for quick band-changing. Each whip is ruggedly constructed. Heavy duty 4-foot, 3/8" diameter fiberglass rods, nearly indestructible eighth-inch diameter PH-17-7 stainless steel whips, and chrome-plated brass fittings will give you years of service.

Sleek low-profile construction has low wind loading and the semi-rigid fiberglass eliminates the need for springs or guys. Black anti-static jacket protects the loading coil and blends with any vehicle. Stainless steel whips are adjustable for lowest SWR. Push the whips down to park in the garage or fully extend for maximum efficiency during mobile operation. Includes Allen wrench and complete tuning and matching instructions.

MFJ-1675T - 75 M MFJ-1617T - 17 M
 MFJ-1660T - 60 M MFJ-1615T - 15 M
 MFJ-1640T - 40 M MFJ-1612T - 12 M
 MFJ-1630T - 30 M MFJ-1610T - 10 M
 MFJ-1620T - 20 M MFJ-1606T - 6 M

Telescopic Whips**MFJ-197X**

MFJ's premium stainless steel telescopic whips are the perfect choice for building collapsible multi-band dipoles, mobiles, portable and base antennas. They are handy for traveling, mini DXpeditions, vacations, etc. Use them to replace your current automatic screwdriver whip for a more highly efficient fixed mobile operation. Rigidly collared at the base, stronger than plated brass, and impervious to rust and corrosion, they stand up to the forces of nature and the rigors of portable operation where others might fail.

MODEL	SECTIONS	HEIGHT'	COLLAPSED"	
MFJ-1979	10	17	27	
MFJ-1977	7	12	26	
MFJ-1976	7	10	20	
MFJ-1974	5	8	24	
MFJ-1972	3	4.5	22	

Base Antennas**80-2 m****MFJ-1798**

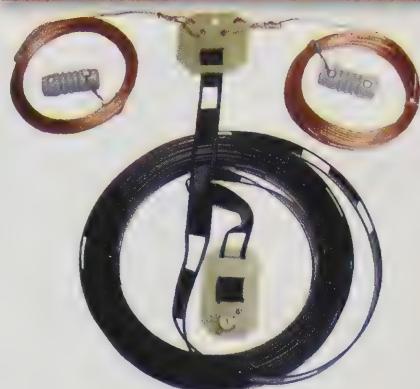
Ten band halfwave vertical antenna. Covers 10 bands: 75 / 80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 meters. No ground radials or ground needed because of the effective counterpoise that is 12 feet across. Mount from ground level to roof top. The feedline is isolated from the antenna using MFJ's AirCore™ balun. Achieves full-sized performance with full-size radiators for 2-20 meters and high efficiency end-loading for 30, 40 and 75 / 80 meters. UPS Shippable.

**40 m - 6 m****MFJ-1796**

6 band vertical covers 40 through 6 meters. 12 feet tall with tiny 24-inch footprint. Mounts anywhere, handles 1500 watts PEP.

40 m - 2 m Mini Dipole**MFJ-1775**

1/2 wave, 6-band rotatable mini-dipole. Just 14 feet wide, can be turned by a small TV-type rotator. Covers 40 through 2 meters, handles 1500 watts.

Longwire Antennas**80 m - 10 m G5RV****MFJ-1778**

All-band G5RV antenna. 102 feet long, 32.5 foot ladder line ending in SO-239 connector for coax feedline. 1500 watts. 80-10 m, 160 meters with tuner/ ground.

40-10 m G5RV Junior**MFJ-1778M**

G5RV Junior. Half-size, 52 feet. Covers 40-10 meters.

On-Glass Dual Band**MFJ-1734**

Dual band glass mount 144 / 70 cm antenna gives 2.6 dB gain on 2 meters and 6.3 dB gain on 70 cm. Low SWR on both bands.

MFJ-1738

Single band glass mount 2 meter antenna gives 2.6 dB gain. Low SWR across entire 144-148 Mhz band. Handles 50 W.

VHF/UHF Mobile**MFJ-1724B**

Mobile magnetic mount dual band antenna gives you a quarter wave stainless steel whip for 2 meters and 70 cm, coax, and connector. Low SWR, 200 watts.

MFJ-1729

Mobile Magnetic Mount super gain dual band antenna. Get a whopping 2.6 dB gain on 2 meters and 6.3 dB gain on 70 cm.

MFJ-1432

Dual band, 62.5" RuffRider™ hyper gain mobile antenna. 7.6 dB gain on 70 cm, 5 dB gain on 2 m. Requires tri-magnet mount, not included.

2 m/6 m Mobile**MFJ-1728B**

Mobile magnetic mount 5/8 wave 2 meter and 1/4 wave 6 meter antenna. Low SWR, 300 watts.

Hi-Q Loop Antennas**MFJ-1786**

Tiny 36" diameter loop antenna operates 10-30 MHz continuously – including WARC bands! Ideal for apartments, small lots, motor homes, attics, etc.

Handles 150 watts. MFJ's included remote control has Auto Band Selection™. Auto tunes to desired band, then beeps to let you know. No control

cable needed. Fast / slow tune buttons, built-in two range cross-needle SWR / Wattmeter. All welded construction, large 1.05" diameter round radiator gives you highest possible efficiency. Heavy duty ABS plastic housing has ultraviolet protection.



HT/MOBILE ANTENNAS

HT Antennas

PRYME®
Radio Products

Dual Band RD-8H

144 MHz / 440 MHz, flexible 6.5" tall HT antenna, gold plated BNC connector.
HRO Price: \$14.95



WiFi Antennas



802.11b Wireless LAN Antennas

NCG offers a wide selection of directional and omnidirectional antennas for Amateur Television, the ISM band, LAN / WAN, data links and wireless internet.

GP-24R

ATV/ISM band: 2400-2500 MHz.
Omnidirectional gain: 15.4 dBi.
Height: 5' 10".
Connector: N-Type.
HRO Price: \$99.95

GP-24-3R

Same as GP-24 but omnidirectional with 3 degree electrical downtilt.
HRO Price: \$159.95

V/UHF Bandpass Filter

OCI



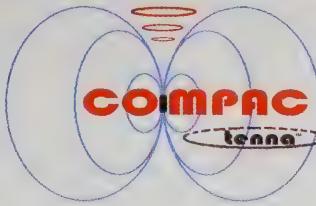
Get rid of unwanted noise and give your 2 m and/or 70 cm receiver the best front end sensitivity. Reduce the squawks and squeals of

intermod and protect from lightning. Good passband loss and out-of-band attenuation with excellent SWR. These filters are made to be transmitted through (tested to 160 watts) and are available with UHF or N connectors.

HRO Price: VHF \$158.95 | UHF \$199.95

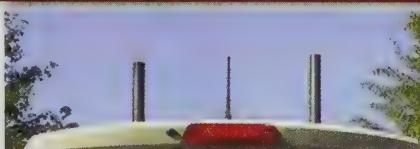
**Antenna Questions?
HRO has answers!**

**Simple contact your local
HRO store for help.**



COMPACtenna is a family of small antennas which require no tuning and a small ground plane yielding high performance. There are antennas for mobile allowing passage into garages and drive-thrus. There are models for home use that are perfect for condos and apartments.

Mobile/HF Antennas



The photo shows the 7" 2m/220/440 model on the left and the 9" Scan-III Government bands on the right.

Model	Height	HRO Price
2m/220/440	7"	\$99.95
2m/440	7"	\$89.95
SCAN-III Govt	9"	\$114.95



HF Antennas HamR-7 Series

HAMR-7 Covers the phone portion of 40, 20, 10, 6, 2m, & 220, 440 MHz bands. Small ground plane and 46" tall. A good choice for condominiums and apartments. Shown with a magnetic mount (not included).

HRO Price: \$379.95

HAMR-7Digi - Covers the lower portion of 40, 20, 10, 6, 2m, & 220 + 440 MHz bands. Small ground plane and 46" tall.

HRO Price: \$379.95

HAMR-7WARC - Covers the 30, 17, 12, 6, 2m, & 220 + 440 MHz bands. Small ground plane and 46" tall. HRO Price: \$379.95

2 m/70 cm Antennas

Austin Dual-Band Mobile Antennas

Model	Band	Gain	Oz.	HRO Price
500C	2 m 70 cm	0	6	\$45.95
Metro- politan	2 m 1.25 m 70 cm	0	6	\$58.95



3.5-54 MHz LITTLE TARHEEL II

10-40 M BABY TARHEEL

When properly installed on your vehicle the Little Tarheel II will provide continuous coverage from 3.5 to 54 MHz with the supplied whip. Like all of our motorized antennas, this model meets the highest standards but in a smaller size.

It comes with sensors pre-installed so if you decide to add one of the auto controllers (SDC-100 Simple Controller, SDC-102 Programmable Controller, Turbo Tuner, and Tunematic) now or later, everything is ready.

This antenna is for the person who wants to enjoy HF mobile with a more compact antenna. Don't let the small size fool you. The Little Tarheel II mounts higher on the vehicle so you have less ground loss and higher performance. Because of its smaller size, this antenna offers the convenience of a more common type of mount like the Diamond K400 Series, the Comet Series, or similar 3/8" stud type mount.

The Little Tarheel II comes as a package. All you need is a mount and a nice HF radio. Included standard with the antenna is: the whip, 20 feet of plug and play control cable, manual control box, ferrite decoupling core, and 3/8" x 24 stud.

The antenna is powder coated in standard colors of black, white, red or silver. It also comes with the tough Lexan™ Weather Shield like its big brothers. This model also uses the commercial 12 volt gear motor.

The antenna has a **ONE YEAR NO MATTER WHAT WARRANTY** to the original owner.

Specifications:

- Lower mast size & weight: 1 1/2" & 1.9 lb.
- Lower mast length: 16".
- Whip length: 32".
- Total antenna length: 54 MHz position: 48", 3.5 MHz position: 54".
- Continuous coverage: 3.5 - 54 MHz.
- Power rating: 200 watts PEP.
- Typical SWR: 1.5 or less.

6 METER ANTENNAS



CUSHCRAFT
COMMUNICATIONS ANTENNAS

Call For Best Pricing And Availability!

Low Noise 6-Meter Loop-Fed Arrays

Cushcraft's computer optimized third generation G0KSC Loop Fed Array (LFA) yagis are specifically designed for low noise – hear weak signals that others can't!

Highly suppressed side lobes eliminate unwanted noise and signal pickup from sides making your desired signal pop out!

See and hear for yourself how signals pop out from a low-noise G0KSC LFA as compared to a top performing yagi at:
www.cushcraftamateur.com/LFA-6M5EL.php

Wide-spaced LFA yagis have lower SWR, higher gain, better front-to-back and are more broadbanded than dipole fed yagis.

Cushcraft's direct 50-ohm feed has no lossy matching network that limits power handling. These LFAs handle 5,000 watts. Your actual operational power is limited by your coax, connectors and other accessories.

Cushcraft LFAs are also computer optimized for maximum mechanical strength using exceptionally strong tooled parts to give you years of reliable service.

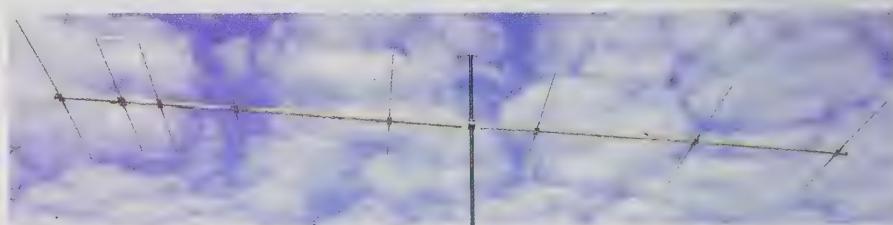
All Cushcraft 6 meter LFAs have heavy duty 2-inch diameter double-walled booms, 5/8" fully insulated elements, and 7/16" outer tip sections. Climb the tower only once!



LFA-6M 5EL: \$319.95



LFA-6M 4EL: \$229.95



LFA-6M 7EL: \$539.95



LFA-6M 8EL: \$649.95

6-Meter Antenna Performance

Model	LFA-6M4EL	LFA-6M5EL	LFA-6M7EL	LFA-6M8EL
Gain	10.7 dBi @ 50.15	11.88 dBi @ 50.15	13.5 dBi @ 50.15	14.09 dBi @ 50.15
F/B	35.24 dB @ 50.15	27.35 dB @ 50.15	23.8 dB @ 50.15	23.81 dB @ 50.15
Peak Gain	10.76 dBi	11.91 dBi	13.5 dBi	14.15 dBi
Peak F/B	44.78 dB	28.01 dB	26.23 dB	26.27 dB
Power Rating	5kW*	5kW*	5kW*	5kW*
SWR	<1.5:1 50-50.4	<1.5:1 50-50.3	<1.5:1 50-50.4	<1.5:1 50-50.4
Stack Distance	17.6 ft recommended	20 ft recommended	24 ft recommended	26.6 ft recommended
2 Stacked Gain	13.59 @ 17.6ft	14.78 dBi	16.28 dBi	16.94 dBi
2 Stacked F/B	25.04 dB	36.02 dB	25.19 dB	25.80 dB
Boom Length	13 ft	21 ft	33.6 ft	42 ft
Weight	8 lb	17 lb	37 lb	39 lb
Turning Radius	6' 11"	11' 4"	17' 8"	21' 4"
Wind Loading	TBA	TBA	TBA	TBA
Wind Survival	120 MPH	118 MPH	108 MPH	100 MPH

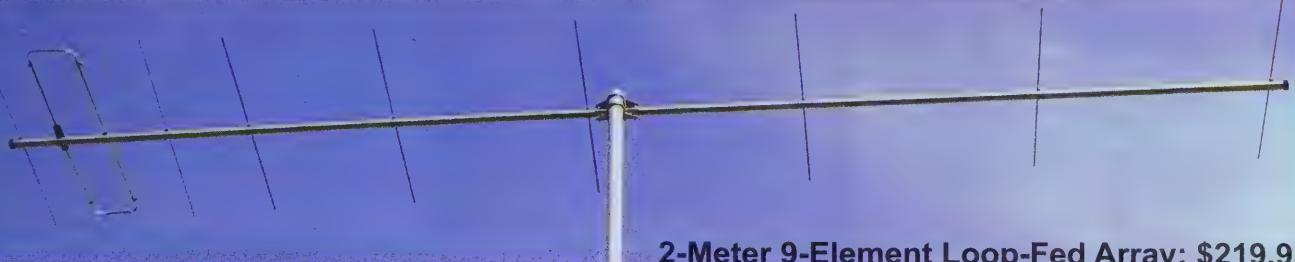
*Power handling is limited only by operating station accessories such as coax.

See www.cushcraftamateur.com for full specifications: SWR curves, patterns, gain, wind loading, wind survival, front-to-back, and more.

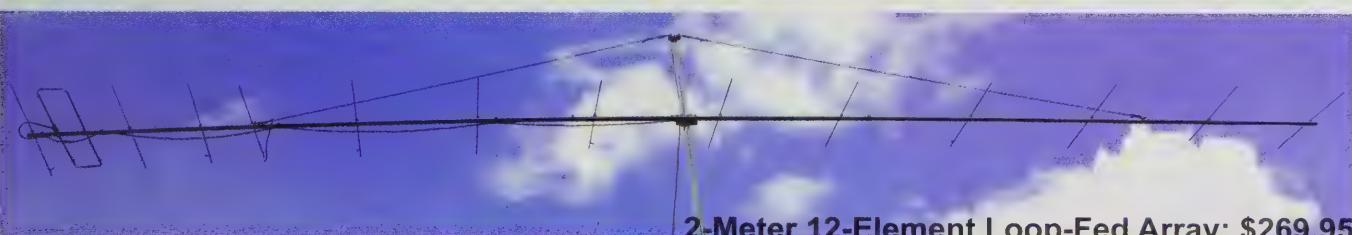


Call For Best Pricing And Availability!

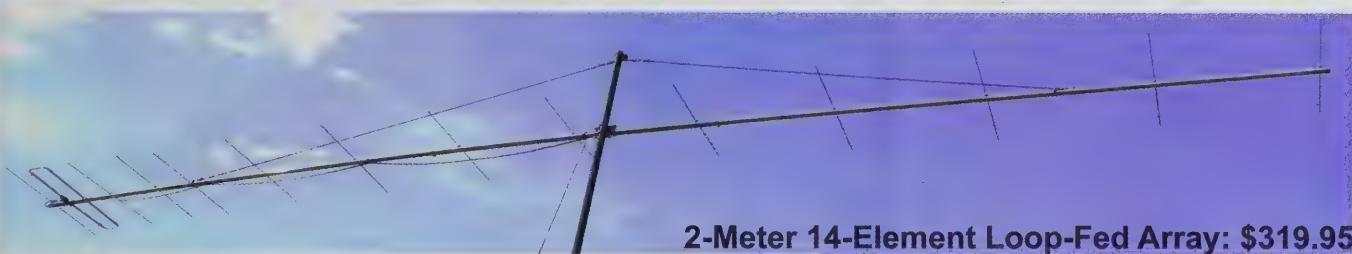
Low Noise 2-Meter Loop-Fed Arrays



2-Meter 9-Element Loop-Fed Array: \$219.95



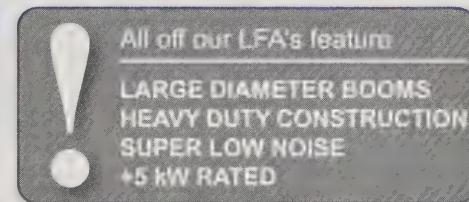
2-Meter 12-Element Loop-Fed Array: \$269.95



2-Meter 14-Element Loop-Fed Array: \$319.95

2-Meter Antenna Performance

Model #	LFA-2M 9EL	LFA-2M 12EL	LFA-2M 14EL	LFA-2M 16EL***
Gain @ 144.1 MHz	14.04 dBi	15.79 dBi	16.56 dBi	17.25 dBi
Gain @ 144.3 MHz	14.06 dBi	15.80 dBi	16.10 dBi	17.27 dBi
F/B @ 144.1 MHz	26.39 dB	30.52 dB	31.26 dB	33.47 dB
F/B @ 144.3 MHz	25.20 dB	28.73 dB	33.86 dB	37.53 dB
Peak Gain	14.09 dBi	15.82 dBi	16.64 dBi	17.3 dBi
Peak F/B	26.67 dB	30.53 dB	34.1 dB	38.02 dB
Power Rating	3 kW*	3 kW*	3 kW*	3 kW*
SWR	<1.1:1 148.600 to 145.200 MHz	<1.1:1 143.700 to 145.900 MHz	<1.1:1 143.900 to 144.800 MHz	<1.12:1 144.000 to 144.900 MHz
Boom Length	14.5 ft	23 ft	28 ft	35 ft
Weight	7.74 lb	9.75 lb	11.75 lb	19.27 lb
Turning Radius	7.36 ft	11.7 ft	14.06 ft	18.12 ft
Wind Loading	1.03 sq ft	1.64 sq ft	2.07 sq ft	2.5 sq ft
Wind Survival	173 MPH**	109 MPH**	83 MPH**	92 MPH**
Stack Distance Vertical	7-10 ft	7-10 ft	7-10 ft	7-10 ft
Stack Distance Horizontal	7-10 ft	7-10 ft	7-10 ft	7-10 ft
2 Stacked Vertical @ 144.3 MHz	16.97 dBi	18.65 dBi	19.39 dBi	20.18 dBi
2 Stacked Horizontal @ 144.3 MHz	16.93 dBi	18.51 dBi	19.38 dBi	20.15 dBi
4 Stacked Vertical @ 144.3 MHz	20.06 dBi	21.74 dBi	22.06 dBi	23.18 dBi
Sky Temp @ 144.1 MHz	239.3 K	221.0 K	214.9 K	213.4 K
G/T Figure @ 144.1 MHz	-3.73 dB	-1.70 dB	-0.85 dB	-0.12 dB



2-Meter 16-Element Loop-Fed Array \$369.95

* Power handling is limited only by operating station accessories such as coax.

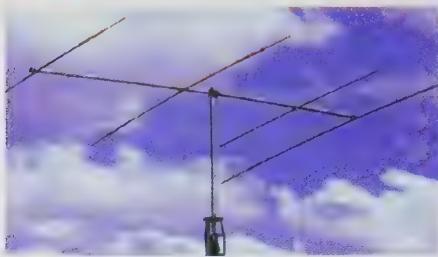
** Other options available if higher wind loading/survivability is required.

***LFA-2M 16EL requires a 1:1 choke balun.

BASE ANTENNAS



CUSHCRAFT
COMMUNICATIONS ANTENNAS



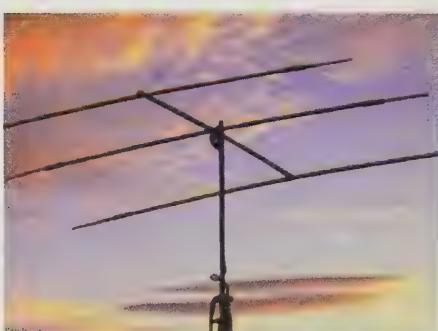
A4S

4-element tri-band (10 / 15 / 20m) beam on an 18 ft boom, handles full legal power limit. A true high-performance tri-bander with precisely tuned high power traps, carefully selected element lengths, and proper spacing. High gain, low SWR, and wide bandwidth makes this a premium antenna choice. A744 adds on 30/40m.



A3S

Classic 3-element tri-band (10 / 15 / 20m) beam on a 14 ft boom, handles full legal power limit. Construction features included pinned boom sections, heavy duty element clamps with backng plates, and all stainless steel hardware. High power traps are still hand-made and individually tuned. A proven performer! A743 adds 30/40m.



A3WS

3-element 12/17 meter beam on a 14 ft boom with all the same construction characteristics of the A3S. Add the optional A103 for 30m.



MA-5B

5-band beam in a compact 26 lb package! Automatic band switching, easy installation, handles 1500 watts on a 7' 3" boom with less than 9 ft of turning radius. Impressive side rejection and front-to-back ratio makes this a great performing HF antenna.



A270-6S

Increase the range of your dual-band base station with a dual-band yagi. Eliminate an extra feed line, and realize extra gain for your FM digital modes. Pre-tuned 3 elements per band. Assembles in a snap. A270-10S pre-tuned 5 elements per band for even better point-to-point communications.

Contact your local Ham Radio Outlet for more information about all available Cushcraft antennas and accessories!

R9

6-80 meter vertical requires no radials! 1500 watts SSB / CW, no antenna tuner needed. Easy to assemble, low profile. Rugged construction. Thick fiberglass insulators, all stainless-steel hardware. 31.5 ft tall, 25 lb. Mounts to 1.25 - 2 inch mast. 4 sq ft wind surface.



R8

6-40 meter Vertical requires no radials. Optional R-8TB tilt base and R-8GK three-point guy kit.



RINGOS

AR-2 (2m) / AR6 (6m) / AR10 (10m) Ringos have been around forever. These compact, FM verticals are broad banded, lightning protected, extremely rugged, economical, electrically bullet-proof, low-angle, and they work!

BASE ANTENNAS



CUSHCRAFT
COMMUNICATIONS ANTENNAS

Call For Best Pricing And Availability!

HF Antennas

Model	Bands	Ele	Fwd Gain dBi	Max F/B dB	Min SWR	Boom Length FT, M	Boom Diameter IN, CM	Longest Ele (Ht) FT, M	Turning Radius FT, M	Max Mast Dia IN, CM	Wind Surf Area SQFT, SQMT	Shipping Weight Lb, KG
MA-5B	10, 12, 15, 17, 20 m	3	5.3 10m, 1.0 12m 4.8 15m, 1.0 17m, 3.6 20m	22	1.2:1	7.3, 2.2	1.5, 3.8	17.5, 5.3	8.8, 2.7	1 1/2, 3.8	3.22, 0.3	26.5, 12
MA-5VA	10, 12, 15, 17, 20 m	1	1-2		1.2:1			14.7, 4.48				6.5, 2.95
MA-6VA	6, 10, 12, 15, 17, 20 m	1	1-2		1.2:1			14.7, 4.48				6.5, 2.95
R6000	20 - 10 + 6 m	1	3		<1.2:1			19, 8.7		1 3/4, 4.4	1.5, 0.14	12.5, 5.6
R8	40, 30, 20, 17, 15, 12, 10, 6 m	1	3		<1.3:1			28, 7.3				23, 10.5
A3S	20, 15, 10 m	3	8	25	<1.2:1	14, 4.3	1.5, 3.8	27.8, 8.5	15.5, 4.7	2, 5.1	4.4, 0.41	30, 13.6
A743 Kit	40 m for A3				<1.2:1			35, 10.7	15.5, 4.7	2, 5.1	0.06, 0.06	7, 3.2
A3WS	17, 12 m	3	8	25	<1.2:1	14, 4.3	1.5, 3.8	25, 7.6	14.4, 4.4	2, 5.1	4.1, 0.38	26.5, 12
A103 Kit	30 m for A3WS				<1.2:1			32, 9.8	14.4, 4.4	2, 5.1	0.04, 0.04	6, 2.7
A4S	20, 15, 10 m	4	8.9	25	<1.2:1	18, 5.5	2, 5.1	32, 9.8	18.4, 5.6	2, 5.1	5.5, 0.51	38, 17.2
A744 Kit	40 m for A4S				<1.2:1			35, 10.7	18.4, 5.6	2, 5.1	0.3, 0.03	7.5, 3.4
TEN-3	10 m	3	8	25	<1.2:1	8, 2.4	1.4, 3.5	18, 5.5	9.8, 3	2, 5.1	2, 0.19	10.5, 4.8
XM240	40 m	2	6	25	1.1:1	22, 6.7	2.5, 6.3	43, 13.1	24.3, 7.4	2.5, 6.35	5.5, 0.51	59, 26.8
D3	20, 15, 10 m	1			<1.2:1			26, 7.9	4, 1.2	2, 5.1	0.9, 0.08	11, 5
D3W	17, 12 m	1			<1.2:1			34, 10.4	5, 1.5	2, 5.1	0.9, 0.08	13, 5.9
D4	40, 20, 15, 10 m	1			<1.2:1			36, 11	5.5, 1.7	2, 5.1	1.3, 0.12	15.5, 7
D40	40 m	1			<1.2:1			42, 12.8	6.5, 2	2, 5.1	1.7, 0.16	15, 6.8
AR-10	10 m	1	3		<1.2:1			17.6, 5.4		1 1/4, 3.2	1 2/3, 0.16	5, 2.3

VHF / UHF Antennas

Model	Frequency Coverage	Ele	FWD Gain dBi	Max F/B dB	Conn	Polarization HORZ, VERT	Boom Length FT, M	Longest Ele (Ht) FT, M	Turning Radius FT, M	Max Mast Dia IN, CM	Wind Surf Area SQFT, SQMT	Shipping Weight Lb, KG	HRO Price
A13B2	144-148	13	15.8	26	U	Y Y	15, 4.6	3.4, 1	8.9, 2.7	2, 5.1	1.8, 0.17	9.5, 4.3	\$289.95
A17B2	144-145	17	18	26	N	Y N	31, 9.4	3.4, 1	17.3, 5.3	2, 5.1	3.9, 0.36	18, 8.2	\$389.95
224WB	222-225	4	10.2	24	U	Y Y	3, 0.09	2.2, 0.7	3, 0.9	2, 5.1	0.23, 0.02	2.5, 1.1	\$124.95
A50-3S	50-54	3	8	20	U	Y N	6, 1.8	9.8, 3	6, 1.8	2, 5.1	1.8, 0.17	8.5, 3.9	\$159.95
A50-5S	50-54	5	10.5	24	U	Y N	12, 3.7	9.8, 3	7.5, 2.3	2, 5.1	2.7, 0.25	13, 5.9	\$219.95
A50-6S	50-54	6	11.6	26	U	Y N	20, 6.1	9.8, 3	11, 3.4	2, 5.1	4.5, 0.42	22, 10	\$389.95
A148-3S	144-148	3	7.8	25	U	Y Y	2.8, 0.9	3.3, 1	2.8, 0.9	2, 5.1	0.27, 0.03	3, 1.4	\$84.95
A148-10S	144-148	10	13.2	24	U	Y Y	12, 3.7	3.3, 1	6, 1.8	2, 5.1	1.2, 0.11	6, 2.7	\$169.95
A148-20T	144-148	20	13	20	U	Y Y	10.8, 3.3	3.3, 1	6.8, 2.1	1.5, 3.8	1.4, 0.13	7.5, 3.4	\$239.95
A449-6S	440-450	6	10.5	18	U	Y Y	2.9, 0.09	1.1, 0.3	2.9, 0.9	2, 5.1	0.3, 0.03	2.5, 1.1	\$94.95
A430-11S	430-440	11		20	U	Y Y	4.2, 1.3	1.1, 0.3	2.8, 0.9	2, 5.1	0.39, 0.04	3.5, 1.6	\$139.95
A449-11S	440-450	11	13.2	20	U	Y Y	4.2, 1.3	1.1, 0.3	2.8, 0.9	2, 5.1	0.39, 0.04	3.5, 1.6	\$139.95
AR270	144-148	1	3		U	N Y		3.75, 1.13		2, 5.1	0.27, 0.03	2, 0.9	\$139.95
	430-450	1	5.5		U	N Y							
AR270B	144-148	1	5.5		U	N Y		7.7, 2.3		2, 5.1	0.47, 0.044	2.4, 1.09	\$199.95
	430-450	1	7.5		U	N Y							
A270-6S	144-148	3	7.8	20	U	Y Y	2.8, 0.09	3.4, 1	2.8, 0.9	2, 5.1	0.3, 0.03	3.5, 1.6	\$149.95
	430-450	3	7.8	18	U	Y Y							
A270-10S	144-148	5	10	20	U	Y Y	6.2, 1.9	3.4, 1	6.2, 1.9	2, 5.1	0.73, 0.07	5, 2.3	\$189.95
	440-450	5	10	18	U	Y Y							
A6270-13S	6m, 2m, 70cm	5	8.6m 10.2m 10.70cm	20	U	Y Y	8.8, 2.56	9.7, 3	6.16, 1.87	2, 5.1	2.52, 0.23	9.5, 4.3	\$309.95
AR-6	50-54		3		U	N Y		10.1, 3.1		1.25, 3.2	0.37, 0.03	4, 1.8	\$119.95
AR-2	135-160		3		U	N Y		3.9, 1.2		1.25, 3.2	0.21, 0.02	2, 0.9	\$74.95
AR-450	440-460		3		U	N Y		1.4, 0.42		0.75, 0.88	0.1, 0.01	2, 0.8	\$64.95
ARX-2	137-160				U	N Y		9.3, 2.8		1.25, 3.2	0.33, 0.03	2.5, 1.1	\$94.95
ARX-2B	134-164		7		U	N Y		14, 4.3		1.25, 3.2	0.5, 0.05	3.5, 1.6	\$134.95
ARX-220B	220-225		7		U	N Y		9.3, 2.8		1.25, 3.2	0.3, 0.03	3, 1.4	\$139.95
ARX-450B	435-450		7		U	N Y		5, 1.5		1, 1.5	0.2, 0.02	2, 0.9	\$119.95

BASE ANTENNAS



VHF / UHF Base Antennas

2 m Verticals

These easy-to-assemble verticals are made of aluminum and high-strength fiberglass. When disassembled the longest part is about 4'. Choose 3, 6, or 7 dB gain and the overall length that best suits your application.



G7-144

- Frequency range: 144-148 MHz.
- Gain: 7 dB.
- Bandwidth: 4 MHz.

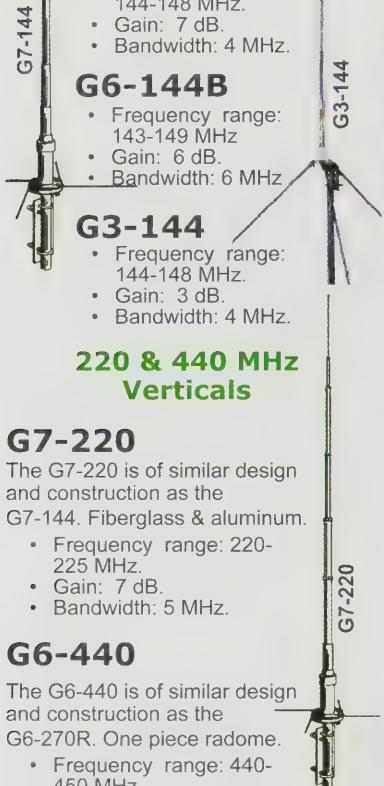
G6-144B

- Frequency range: 143-149 MHz
- Gain: 6 dB.
- Bandwidth: 6 MHz

G3-144

- Frequency range: 144-148 MHz.
- Gain: 3 dB.
- Bandwidth: 4 MHz.

220 & 440 MHz Verticals



G7-220

The G7-220 is of similar design and construction as the G7-144. Fiberglass & aluminum.

- Frequency range: 220-225 MHz.
- Gain: 7 dB.
- Bandwidth: 5 MHz.

G6-440

The G6-440 is of similar design and construction as the G6-270R. One piece radome.

- Frequency range: 440-450 MHz.
- Gain: 6 dB.
- Bandwidth: 10 MHz.

Repeater Antennas THE SPIRIT SERIES

Hustler's omnidirectional, collinear design base station antennas are enclosed in a rugged fiberglass radome that will help minimize pattern variations due to high winds or extreme conditions. Models are available for 144, 220, 440, 900 MHz, and 1.2 GHz. The gain will be unity, 3, 6, 9, or 12 dB depending on the frequency.

Call HRO for quotes on custom frequencies.

2 m / 70 cm Dual Band G6-270R

The G6-270R is a combination G6-144B and G6-440. It is factory tuned for quick and easy installation.

- Frequency range: 144-148 MHz / 435-445 MHz.
- Gain: 6 dB.
- Bandwidth: 4 MHz – 2 m / 10 MHz – 70 cm.
- One piece radome.
- VSWR: < 1.5:1 @ resonance.

HF Base Antenna

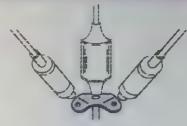
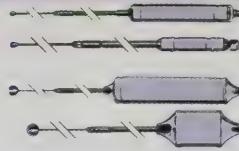
6-BTV 10, 15, 20, 30, 40, 75 or 80 m

5-BTV 10, 15, 20, 40, 75 or 80 m

4-BTV 10, 15, 20, 40 m



HF Resonators



VP-1

Customize your HF mobile system with Hustler products. Resonators may be used separately on one of the masts or up to three at a time with the VP-1. Add the QD-2, springs and mounts as needed for your installation.

Hustler HF Resonators

Model	Type	Band	Power SSB	Bandwidth 2:1 SWR	Weight lb.
RM-10	STD	10M	400W	150-250KHz	0.41
RM-11	STD	11M	400W	150-250KHz	0.41
RM-12	STD	12M	400W	90-120KHz	0.41
RM-15	STD	15M	400W	100-150KHz	0.42
RM-17	STD	17M	400W	120-150KHz	0.44
RM-20	STD	20M	400W	80-100KHz	0.46
RM-30	STD	30M	400W	50-60KHz	0.84
RM-40	STD	40M	400W	40-50KHz	0.84
RM-60	STD	60M	400W		
RM-75	STD	75M	400W	25-30KHz	1.05
RM-80	STD	80M	400W	25-30KHz	1.05
RM-10-S	Super	10M	1kW	250-400KHz	1
RM-15-S	Super	15M	1kW	150-200KHz	1.2
RM-20-S	Super	20M	1kW	100-150KHz	1.25
RM-40-S	Super	40M	1kW	50-80KHz	1.8
RM-75-S	Super	75M	1kW	50-60KHz	2.1
RM-80-S	Super	80M	1kW	50-60KHz	2.1

Hustler Base Antennas

Model	Band	Gain	Connector	Height Ft.
G7-144	2 m	7 dB	N Female	16.3
G6-144B	2 m	6 dB	SO-239	9.8
G3-144	2 m	3 dB	SO-239	7.5
G7-220	1.25 m	7 dB	N Female	10.2
G6-440	70 cm	6 dB	N Female	7.3
G6-270R	2 m/70 cm	6 dB	N Female	7.6
6-BTV	10-30-80 m			24
5-BTV	10-80 m			25
4-BTV	10-40 m			21.4

VHF/UHF Mobile Antennas

Model	Band	Gain	Power	Mount
LMC-270	2 m/70 cm	2.4/4	100	NMO
MX-270	2 m/70 cm	2.4/4	100	Mag
LMG-144	2 m	3.4	200	NMO
BBG-144	2 m	3.4	200	NMO
BBG-440-5	70 cm	5	200	NMO
BBG-144	2 m	3.4	200	Trunk
MX-220	1.25 m	3.4	200	Mag
MX-2B	2 m	3.4	200	Mag
MX-440B	70 cm	3.4	200	Mag
SF-2	2 m	3.4	100	3/8 x 24
SF-220	1.25 m	3.4	100	3/8 x 24
RX-2	2 m	3.4	100	Mag
RX-220	1.25 m	3.4	100	Mag
RX-440	70 cm	5	100	Mag
CG-144	2 m	5.2	200	3/8 x 24
CG-220	1.25 m	5.2	200	3/8 x 24
CGT-144	2 m	5.2	200	Trunk
CGT-220	1.25 m	5.2	200	Trunk
THF	140-500	Unity	200	Trunk
UGM	140-500	Unity	25	Mag

MOBILE ANTENNAS/MOUNTS

VHF / UHF Mobile Antennas

Dual Band

Dual band models for 144/440 MHz give you 2.4 dB / 4 dB gain. The antennas are rated at 100 watts.



Coil and Whip

Models for 144 or 440 MHz are power rated for 200 watts. NMO-style coil on each requires an NMO mount.



LMG-144 3.4 dB gain
 • Chrome top and bottom.
 • Contact-silver painted push pin.

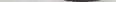
BBG-144 3.4 dB gain

BBG-440-5 5.0 dB gain
 • Chrome top, swivel ball, and spring

BBGT-144 3.4 dB gain
 • Includes trunk mount
 • 17 ft RG58/U coax
 • PL-259 connector

Magnetic Mounts

Models for 144, 220, and 440 MHz are power rated for 200 watts. Each has an NMO-style coil and a magnetic mount.



MX-2 144 MHz 3.4 dB gain
MX-220 220 MHz 3.4 dB gain

MX-440 440 MHz 3.4 dB gain

- Chrome top.
- 10 oz magnet.
- 17 ft RG58/U coax.
- PL-259 connector.

MX-2B 144 MHz 3.4 dB gain

MX-440B 440 MHz 3.4 dB gain

• Same as above but all black coil

Collinear

Collinear models for 144 MHz and 220 MHz provide 5.2 dB gain. They are power rated for 200 watts. All have a swivel ball for vertical positioning.



CG-144 6 MHz bandwidth

CG-220 4 MHz bandwidth

- 3/8" x 24 thread.
- 5/8 over 1/4 wave.

CGT-144 6 MHz bandwidth

CGT-220 4 MHz bandwidth

- Trunk mount base.
- 17 ft RG58/U coax.
- PL-259 connector.

Unity Gain

An antenna to custom trim as needed for VHF or UHF frequencies. Covers 140-500 MHz.

THF
 Trunk Lip Mount



UGM
 Magnet Mount



Accessories

Radial Kit **MKR-2**



Used to convert RX Series, SF Series, & CG Series to fixed station operation. Contains three radials. Mount can accept any 3/8" x 24 threaded mount.



Quick Disconnect **QD-2**

Remove antennas easily with a push and twist release. Compression design of 100% stainless steel. 3/8" x 24 threads.

Mobile Mounts

• **BM-1** Bumper mount with stainless steel strap and 1" diameter ball with 3/8 x 24 threads.



• **C-30** Chrome plated 4" spring. Copper braided center conductor to prevent detuning.



• **MBM** Powerful 5" diameter magnet with 3/8 x 24 threads. 16' of RG58U coax with PL-259 connector.



• **SSM-1** Heavy duty ball mount with 4" stainless steel spring with copper braided center conductor to prevent detuning. 180 degree adjustable.



• **SSM-2** Heavy duty 2" diameter stainless steel ball mount. 180 degree adjustable. Accepts 3/8 x 24 antennas.

x

• **SSM-3** Heavy duty stainless steel 4" spring with 3/8 x 24 coupling stud. Copper braided center conductor to prevent detuning.



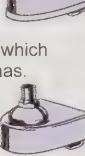
• **C-32** Chrome plated 1" ball mount. Accepts 3/8 x 24 antennas.

x

• **C-29** Stainless steel 4" spring. Copper braided center conductor to prevent detuning.



• **HOT** Trunk lip mount with easy off/on with thumb knob. 180 degree 1" diameter ball, which accepts 3/8" x 24 antennas. RG58U coax with PL-259 connector.



• **TLM** Trunk lip mount which accepts 3/8 x 24 antennas. RG58U coax with PL-259 connector.



• **RVM** Recreational vehicle mount with heavy duty bracket. Easy antenna removal or lay down with thumb knob. 1" ball accepts 3/8" x 24 antennas. RG58U coax with PL-259 connector.



All mounts below are supplied with 17' RG-58U cable.

CHMA	3/8" Hole mount without connector
CHMA-B	3/8" Hole mount w/crimp-on BNC
CHMA-P	3/8" Hole mount w/crimp-on PL-259
CHMB	3/4" Hole mount without connector
CHMB-B	3/4" Hole mount w/crimp-on BNC
CHMB-B	3/4" Hole mount w/crimp-on PL-259
CMMA	NMO 10 oz mag w/solder-on PL-259
CTMA	Trunk mount without connector
CTMA-P	Trunk mount w/crimp-on mini UHF

Mobile Masts

Fold-Over

MO-1

Mobile mast 54" high for bumper, fender or hitch mounting. Folds over at 15" above base. 3/8 x 24 threaded.



Fold-Over

MO-2

Mobile mast 54" high for bumper, fender or hitch mounting. Folds over at 27" above base. 3/8" x 24 threaded.



Solid Mast

MO-3

Mobile mast 54" high for bumper, fender or hitch mounting. Solid aluminum with white vinyl coating. 3/8 x 24 threaded.



Solid Mast

MO-4

Mobile mast 22" high for trunk or deck mounting. Three retuning tip rods included. 3/8" x 24 threaded.



SWL/SCANNER/HF/HT ANTENNAS

Log Periodic



CLP5130-1

The CLP5130 antennas are high gain, wide band VHF/UHF log periodic beams for horizontally polarized base station use. Covers amateur bands from 50-1300 MHz, FM broadcasting, scanning, VHF / UHF TV, air band communications, government and business bands.

Forward gain is 10 to 12 dB – 10 to 16 times the gain of a non-directional discone type antenna. The VSWR is less than 2.0:1 across the band. The high-quality aluminum antennas have a boom design that allows movement of the phasing line. Distortions in the vertical and horizontal planes are minimized and element adjustment is not necessary. The boom-to-mast bracket is made of a lightweight and rugged magnesium alloy.

Create Antennas

	CLP 5130-1	CLP 5130-2
Frequency	500-1300 MHz	108- 1300 MHz
No. Elements	23	19
Power PEP	500 W	500 W
Forward Gain	10-12 dBi	10-12 dBi
Front/Back	15 db	15 db
Longest Element	9' 10"	4' 6"
Boom Length	5' 9"	4' 6"
HRO Price	\$459.95	\$369.95

The Owl

Want to keep those birds off your antenna system?

The OWL is just the trick. Mount this fella on top of your tower and the birds will stay away. Optional "Pug" and "Winter Scarf" versions available from our Denver office.

HRO Price: \$19.95



Discone Antennas



MFJ

MFJ-1868

Ultra wide-band antenna receives 25-1300 MHz. Perfect for scanners. Transmit 50-1300 MHz. Handles 200 W. Ideal for 2 / 6 meters, 220 /

440 MHz. Includes SO-239 connector, 50' coax, stainless steel elements and mounting hardware. **HRO Price: \$79.95**



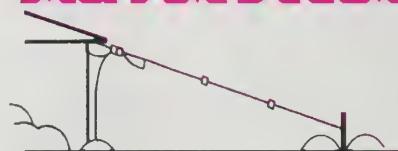
Super Wideband
D-130J/NJ

Monitor 25-1300 MHz. Transmit on 50, 144, 430, 1200 MHz. All stainless steel. Input power 200 watts maximum. Impedance: 50 ohms. VSWR: 1.5:1. Length: 1.7 meters. Mounts on 1" to 2" masts. D-130 UHF and D-130NJ Type-N connector.

HRO Prices: D-130J \$94.95, D-130NJ \$95.95

SWL Antennas

ALPHA DELTA



DX-SWL

The DX-SWL is tuned for the most popular SWL bands (13, 16, 18, 19, 21, 25, 31, 41, 49, 90 and 120 meters). It can be used as a multi-band transmit antenna with the appropriate antenna tuner. Length is 60 feet. Requires a single support. Standard coax connects antenna to your radio. Feed point is 50 ohms. SO-239 connection. **HRO Price: \$129.95**

DX-SWL-S

Requires only a single elevated support 25' or higher. DX-SWL Frequency Coverage: 90m (3.2-3.5 MHz) 60m (4.75-5.0 MHz) 49m (5.95-6.2 MHz) 41m (7.1-7.3 MHz) 31m (9.5-9.9 MHz) 25m (11.65-12.05 MHz) 21m (13.6-13.8 MHz) 19m (15.1-15.6 MHz) 16m (17.55-17.9 MHz) 13m (21.45-21.85 MHz) This antenna is a "no-trap" design using the same components and "ISO-RES" coil design as used in other Alpha Delta designs. Includes insulators, support rope and static electricity protector. Antenna is only 40 feet long.

HRO Price: \$119.95



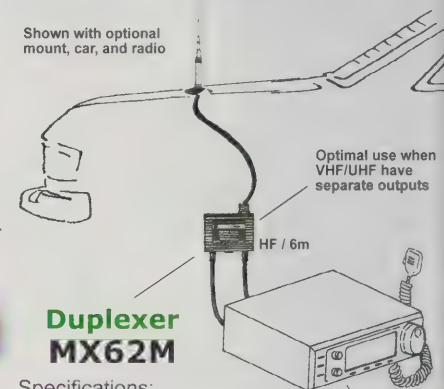
Mobile Antenna System for HF/VHF Transceivers HV7A

Five band capability: 70 cm, 2 m, 6 m and 2 HF bands through use of loading coils. Fold-over feature allows for easy access into low overhead buildings.

Bands Supplied:
Opt. Loading Coils:
Power, PEP:
Mount Connection:
Length:
SWR:
HRO Price:

10m / 6m / 2m / 70cm
40m / 20m / 17m / 15m
HF 120W / VHF 200W
UHF
54" (HV7A)
1.5:1 nominal
\$109.95

Shown with optional mount, car, and radio



Duplexer
MX62M

Specifications:

- HF / 6m, 2m, 70cm duplexer
- 1.6-56 MHz LPF
- 76-470 MHz HPF
- (76-120 receive only)
- Watts: 600 PEP.
- 2 dB LPF Loss
- 3 dB HPF Loss
- Isolation: 50 dB

Use with HF/VHF mobile transceivers such as the IC-7100 serie, FT-891, or combine 2m and HF rigs.

Optional Loading Coils

HVC14 20m \$37.95
HVC18 17m \$37.95
HVC21 15m \$37.95

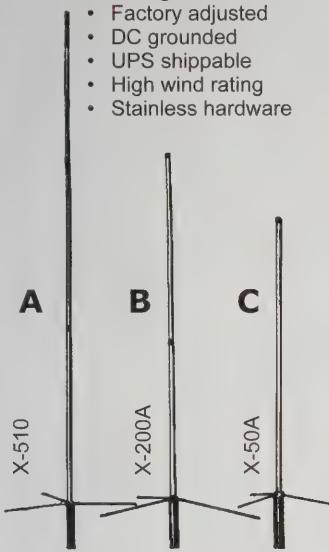
Handheld Antennas

Upgrade the RX/TX performance of your HT. A definite improvement over the stock antenna.

SRH-770S
RH3 / SRH805 SMA
RH77CA / SRH77CA
SRH320A
RH707
SRH519 / SRH815 SMA

DIAMOND
ANTENNA

- Wide-band performance
- Highest gain
- Fiberglass radome
- Factory adjusted
- DC grounded
- UPS shippable
- High wind rating
- Stainless hardware



1. 52-54 MHz only. DPGH62 is adjustable from 50-54 MHz
2. 28/50 MHz 400 W PEP, 14/21 MHz 400 W PEP, 7 MHz 200 W PEP

The Standard by Which All Others are Judged

Base Antennas*

Model	Bands	Gain, dB	Watts	Connector Type	Weight (lb)	Length (ft)	MPH (no ice)	Fig	HRO Price
A502HB	6m Yagi 2 element	6.3 dBi	400 PEP	UHF	3.75	2.6			\$89.95
A144S5	2m Yagi 5 element	6.0 dBi	100 PEP	UHF	1.4	3.1			\$59.95
A430S10	70cm Yagi 10 element	13 dBi	100 PEP	UHF	1.4	3.6			\$69.95
A430S15	70cm Yagi 15 element	14.8 dBi	100 PEP	UHF	2.15	7.4			\$89.95
CP-22E	2m	6.5	200	UHF	3	9	90	B	\$54.95
CP-5HS (2)	40/20/15/10/6m		200	UHF	6.6	11.75	80		\$379.95
CP-62	6m	5.5 dBi	200	UHF	9	22	80		\$199.95
CP-610	10/6m	5.5/3.4 dBi	200	UHF	9	22	80		\$229.95
F-22A	2m	6.7	200	UHF	5	10.5	112	B	\$94.95
F-23H	144-174 tunable	7.8	350	UHF	5	15	90	A	\$149.95
F-718	70 cm	11.5	250	N	5	15	90	A	\$199.95
MG-200	2.4 GHz	11		N	3	6	135	C	\$59.95
V2000A (1)	6m/2m/70cm	2.1/6.2/8.4	150	UHF	4	8.3	110	B	\$159.95
X-30A	2m/70cm	3.0/5.5	150	UHF	2	4.5	135		\$69.95
X-50A	2m/70cm	4.5/7.2	200	UHF	3	5.6	135	C	\$99.95
X-50NA	2m/70cm	4.5/7.2	200	N	3	5.6	135	C	\$99.95
X-200A	2m/70cm	6.0/8.0	200	UHF	4	8.3	112	B	\$124.95
X-300A	2m/70cm	6.5/9.0	200	UHF	4	10	112		\$139.95
X-300NA	2m/70cm	6.5/9.0	200	N	4	10	112	B	\$139.95
X-510HDM	2m/70cm	8.3/11.7	330/250	UHF	5	17.2	90	A	\$179.95
X-510HDN	2m/70cm	8.3/11.7	330/250	N	5	17.2	90	A	\$179.95
X-510NJ	144/430	8.3/11.7	200	N	5	17.2	90	A	\$199.95
X-6000A	2m/70/23cm	6.5/9.0/10.0	100	N	5	10	112	B	\$169.95
BB7V	2-30 MHz		250	UHF	6	5/22	80		\$369.95
CP6AR	75/40/15/10/6m		200	UHF	9.9	15.1	80		\$419.95

All base antennas grounded for lightning protection. Factory adjusted for American amateur bands, no tuning required.

*Most longer base antennas require additional freight. This applies to ALL Diamond Base Antennas

Handheld and Receiving Antennas

Model	Description	HRO Price
D-130J	Wideband discone 25-1500 MHz. 20 W Transmit 50-1300 MHz. 100 W 144-3000 MHz, No cable.	\$94.95
D-130NJ	Wideband discone 25-1500 MHz. 20 W Transmit 50-1300 MHz. 100 W 144-3000 MHz, No cable, Type N.	\$95.95
D-3000N	Wideband discone RX 25-3000 MHz, TX 50-1300 MHz 20 W 50 MHz, 20 W transmit 50 MHz. 100 W 144-1300 MHz, 67" tall, Type N	\$129.95
RH-3	2m/70cm dual-band HT antenna. 1.75" BNC. 120-900 MHz receive	\$26.95
RH-77CA	High gain 2m/70cm dual-band HT antenna. Receive range to 900 MHz. BNC	\$22.95
RHF-10	144/440. Air band 6W. Receive only 150/300/450/800/900 MHz. BNC	\$21.95
RHF-40	Super flexible version of Model RH-77CA	\$27.95
SRHF-40	Super flexible 15" tail SMA 144/440 MHz HT antenna	\$26.95
RH-205	2m HT antenna, telescopic, 5/8 fully extended, 47.5"; 1/4 retracted, 9".	\$26.95
RH-519	2m/70cm slim dual-band HT antenna. Flexible. 8" BNC, 10 watts.	\$24.95
RH-707	2m/70cm dual-band, tilttable whip HT antenna. 8-1/4" BNC.	\$29.95
SRHF10	HT antenna, 144/440 MHz. Air Band 6W, SMA, Receive only 150/300/450/800/900 MHz	\$21.95
SRF-10	144/440 MHz, Air Band 150/300/450/800/900 MHz (Receive only), 2.75", 6W, SMA(F) 1/4 wave length	\$21.95
SRH-519	2m/70cm slim dual-band HT antenna. Flexible. 8" SMA, 10 watts.	\$26.95
SRH-77CA	High gain 2m/70cm dual-band flexible HT antenna, SMA	\$22.95
SRH-770S	2m/70cm, 10W max, SMA-P, 2m 3/8 wave 2.15dBi, 70cm 3/4 wave 4.5dBi	\$34.95
SRJ-77CA	Same as SRH-77CA for Wouxun, SMA. Reverse SMA.	\$24.95
SRH-229	For Alinco DJ-G29T. High gain, flexible whip, 13", 220-900 MHz, 10W, 4dB, SMA	\$32.95
SRH-320A	2m/1-1/4m/70cm tri-band HT antenna. Flexible. SMA. 10 watts	\$46.95
SRH-789	Telescoping handheld antenna 95-110 MHz, 6 sections, folds at base	\$32.95
SRH-789	Same as SRH-789 but BNC connector	\$32.95
SRH-805	2m/70cm/23cm tri-band HT antenna. 1.75" SMA, 10 watts.	\$26.95
SRH-815	2m/70cm/23cm tri-band HT antenna. Flexible. 6" SMA, 6 watts.	\$31.95
SRH-940	6m/2m/440 MHz SMA HT antenna	\$39.95
SRH-999	6m/2m/70cm/23cm quad-band HT antenna. Flexible. 21 1/4" SMA, 10 watts.	\$54.95

Specialty Antennas

High Power 2 m / 70 cm

Dual-band mobile antenna. 300 watts (2m) and 250 watts (70cm). Use K400 and K600 series mounts. **NR7900A HRO Price: \$84.95**

Quad Band FM

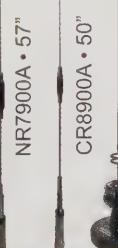
10m/6m/2m/70cm quad FM antenna for FT8900R radio or multi radio applications. Use K400 and K600 series mounts. **CR8900A HRO Price: \$99.95**

2 m / 70 cm Mobile

Ideal antenna for increased performance of HT radio or where a compact antenna is required. Magnetic mount base. 1/4 wave (2m) and 1/2 wave (70cm), black finish. Available in UHF or SMA cable configuration.

MR77 / MR77SMA
HRO Price: \$37.95

2 m / 70 cm Mobile
NR-770HRKS
HRO Price: \$109.95

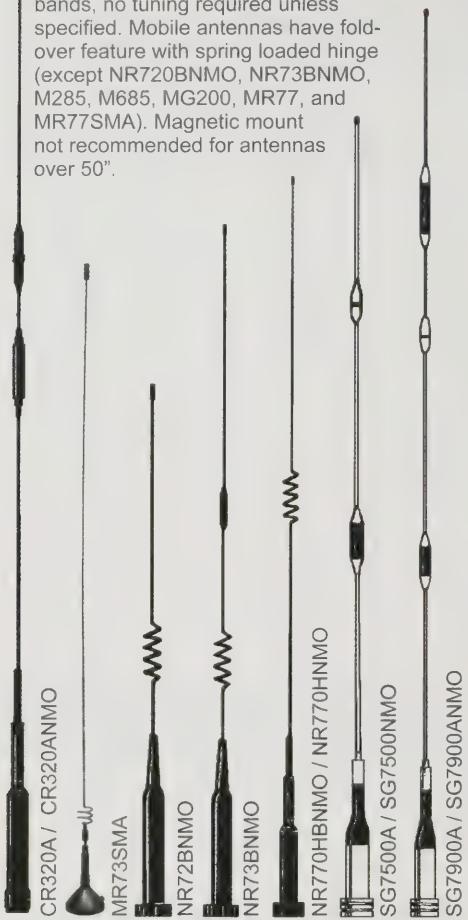


ANTENNAS/DUPLEXERS

DIAMOND
ANTENNA

Mobile Antennas

Factory adjusted for American amateur bands, no tuning required unless specified. Mobile antennas have fold-over feature with spring loaded hinge (except NR720BNMO, NR73BNMO, M285, M685, MG200, MR77, and MR77SMA). Magnetic mount not recommended for antennas over 50".



Antennas

Model	Bands	Gain dB	watts	Mount	Length (in)	HRO Price
AZ504SP	2m/70cm	2.15 dBi	50	UHF	15.5	\$39.95
AZ507RSP	2m/70cm	2.15(2m) 4.9(70cm)	50	UHF	27.5	\$46.95
CR320A* (4)(6)	2m/1-1/4m/70cm	2.1/3.8/5.5	100	UHF	36	\$79.95
CR320BNMO* (4)(6)	2m/1-1/4m/70cm	2.1/3.8/5.5	100	NMO	36	\$79.95
CR627B* (4)(5)	6m/2m/70cm	2.1/4.5/7.2	150	UHF	60	\$84.95
CR627BNMO* (4)(5)	6m/2m/70cm	2.1/4.5/7.2	150	NMO	60	\$84.95
CR8900A (4)(7)(FM Only)	10m/6m/2m/70cm	2.15(2m) 5.5(70cm)	60	UHF	50	\$99.95
D220 discone	100-1600 MHz	2	50	PL-259	35.5	\$109.95
MG200 (7)	2.4 GHz	7		N	23.6	\$59.95
HF6FX (4)(7)	6m	2.15	250	UHF	44	\$69.95
HF50CX (4)(7)	6m	3.5	200	UHF	71	\$99.95
M285 (4)(8)	2m	3.4	200	UHF	52.4	\$31.95
M285SNMO (4)(8)	2m	3.4	200	NMO	52.4	\$31.95
MR73S Mag Mt	2m/70cm	2.15/3.4	10	SMA	20	\$26.95
MR73SJ Mag Mt	2m/70cm	2/3.4	10	SMA	20	\$26.95
MR75S Mag Mt	2m/70cm	2.15/3.4	35	SMA	20	\$36.95
MR75SJ Mag Mt	2m/70cm	2/2.4	35	SMA	20	\$36.95
MR77* (7)	2m/70cm	2.15/3.4	70	†	20	\$37.95
MR77SMA* (7)	2m/70cm	2.15/3.4	70	**	20	\$37.95
MR77SJ Mag Mt	2m/70cm	2.15/3.4	70	SMA	20	\$37.95
M6855 (4)(7)	6m	2.15	200	UHF	52.4	\$31.95
M685SNMO (4)(7)	6m	2.15 dBi	200	NMO	52.4	\$31.95
NR124	23cm	8.4	100	Type N	25	\$49.95
NR124NMO	23cm	8.4	100	NMO	25	\$54.95
NR140BNMO	2m/70cm/23cm	4	159	NMO	36.2	\$46.95
NR22L (4)	2m/70cm	6.5	100	UHF	96.8	\$64.95
NR2000NA	2m/70cm	3.15/6.3/9.7	100	N	39	\$84.95
NR-72BNMO* (4)(7)	2m/70cm	2.1/2.1	100	NMO	14	\$39.95
NR-73BNMO*	2m/70cm	2.1/5.3	100	NMO	33	\$54.95
NR-770HA	2m/70cm	3.0/5.5	200	UHF	40	\$48.95
NR-770HNMO	2m/70cm	3.0/5.5	200	NMO	41	\$53.95
NR-770HB*	2m/70cm	3.0/5.5	200	UHF	40	\$53.95
NR-770HBNMO*	2m/70cm	3.0/5.5	200	NMO	41	\$53.95
NR-770HKRS (9)	2m/70cm	3.0/5.5	200	UHF	40.2	\$109.95
NR-7900 (4)	2m/70cm	3.7/6.4	300/250	UHF	57	\$84.95
SD300 Screwdriver	3-20 MHz		200	UHF	73	\$389.95
SG7000A (4)(7)	2m/70cm	2.1/3.8	100	UHF	18	\$69.95
SG7500A	2m/70cm	3.5/6.0	150	UHF	41	\$69.95
SG7500NMO	2m/70cm	3.5/6.0	150	NMO	42	\$72.95
SG7900A (4)	2m/70cm	5.0/7.6	150	UHF	60	\$99.95
SG7900A/NMO (4)	2m/70cm	5.0/7.6	150	NMO	62	\$114.95

* Black anodized finish.

† Mag mount with 13' RG58 cable w/UHF.

** Mag Mt w/13' RG58 cable w/SMA.

4. Magnetic mounts not recommended.

Vehicle ground required.

5. 52-54 MHz only.

6. 100 watts on 1-1/4 m; 200 watts on 2m and 70cm.

7. Gain rated in dBi.

8. Tunable from 144-174 MHz.

9. Black with adhesive-backed mount.

Duplexers and Triplexers

Model	Port	Freq MHz	CW watts	PEP watts	Loss dB	Isol. dB	MIX Conn.	Port Conn.	HRO Price
MX-37	LPF	1.6-470		100	.25	45	N-Jack (F)	PL-259/12" cable N-Male/12" cable	\$59.95
	HPF	900-1300		50	.45				
MX-62M	LPF	1.6-56		200	.2	50	SO-239	PL-259/12" cable PL-259/12" cable	\$69.95
	HPF	76-470		200	.2	50			
MX-72D								Similar to MX-72H, but direct connection	\$46.95
MX-72H	LPF	140-150	150	150	.1	60	SO-239	PL-259/12" cable PL-259/12" cable	\$49.95
	HPF	400-460	100	100	.2	60			
MX-72N								Similar to MX-72H, but Type-N on UHF port	\$49.95
MX-72A								Similar to MX-72H, but Type-N on MIX Conn.	\$54.95
MX-214	LPF	140-150		300	.3	40	SO-239	PL-259/12" cable PL-259/12" cable	\$65.95
	HPF	220-225		200	.4	40			
MX-324	LPF	1.6-150		800	.3	40	SO-239	PL-259/12" cable PL-259/12" cable PL-259/12" cable	\$89.95
	BPF	220-225		600	.4	40			
	HPF	400-550		500	.4	40			
MX-610	LPF	1.3-30		600	.2	45	SO-239	PL-259/12" cable PL-259/12" cable	\$69.95
	HPF	49-470		500	.25	45			
MX-2000	LPF	1.6-60		800	.15	60	SO-239	PL-259/12" cable PL-259/12" cable PL-259/12" cable	\$83.95
	BPF	110-170		800	.20	60			
	HPF	300-950		500	.25	60			
MX-3000	LPF	1.6-160		800	.15	55	N-Jack (F)	PL-259/12" cable PL-259/12" cable N-Male/12" cable	\$79.95
	BPF	350-500		400	.25	55			
	HPF	850-1300		200	.30	55			
MX-3000N								Similar to MX3000, but with Type-N male on BPF connection	\$85.95

MX-72D



MX-324
MX-2000
MX-3000
MX-3000N

MX-72H



MX-72N



MX-62M



MX-610



MX-3000

ACCESSORIES & MOUNTS

DIAMOND
ANTENNA

Special Trunk Mount for 3/8 x 24 thread antennas **K400-3/8C**

Here's the ideal mounting system for Little Tarheal, Hamsticks™, and other medium weight antennas. A spring is recommended for stiff or heavy antennas.

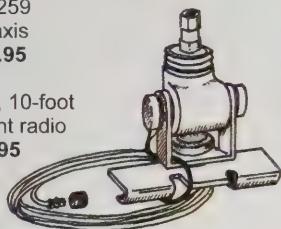
Power: 350 watts RMS

Cable: 6 1/2' RG316 Teflon® coax

Connector: PL-259

Adjustment: 2 axis

HRO Price: \$73.95



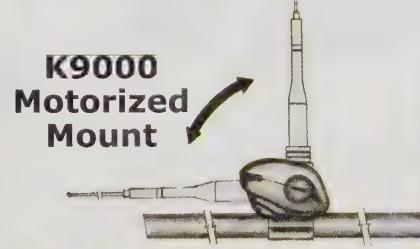
Note: Use C110, 10-foot extension for front radio installation. \$19.95

Diamond Accessories

Model	Description	HRO Price
SP-1000	Lightning Protector DC-1000 MHz, Max Power 400 W PEP, SO-239, VSWR <1.2	\$29.95
SP-1000PW	Lightning Protector DC-1000 MHz, Max Power 400 W PEP, SO-239, PL-259, VSWR <1.2	\$34.95
SP-3000P	Lightning Protector DC-3000 MHz, Max Power 400 W PEP, Type-N(F), Type-N(M), VSWR <1.2 Waterproof	\$41.95
SP-3000W	Lightning Protector DC-3000 MHz, Max Power 200 W PEP, Type-N, VSWR <1.2 Waterproof	\$41.95
MGC-50	Window feedthru assembly, HF-50 MHz 50 W, 2m 40 W, 440 MHz 30 W, 1200 Hz 10 W, SO-239	\$53.95
CX-210A	Heavy duty wideband coax switch, DC-1000 Mhz. 1.5 kW, UHF(F) to UHF(M) Waterproof	\$49.95
CX-210N	Heavy duty wideband coax switch, DC-1500 MHz. 1.5 kW, N connector.	\$79.95
CX-310A	Heavy duty 3 position coax switch, wideband. DC-800 MHz. SO-239 connectors.	\$89.95
DL-30A	Dummy load. DC-500 MHz, 15 W RMS (max)/100 W peak. PL-259 connector.	\$39.95
DL-30N	Dummy load. DC-1500 MHz, 15 W RMS (max)/100 W peak. Type N connector.	\$54.95
D38-24	UHF to 3/8-24 Adapter	\$19.95
SS-770R	Phasing harness, 114 MHz, 430 MHz, Input SO-239, Output x2 PL-259	\$74.95

Mobile Mounts

Model	Description	HRO Price
C101	UHF base 6.5' RG316 Teflon coax w/PL-259	\$37.95
C101NMO	NMO base 6.5' RG316 Teflon coax w/PL-259	\$37.95
C101-3/8C	Replacement cable only for K400-3/8C	\$34.95
C101-3/8C Kit	Replacement cable and hardware for K400-3/8C	\$44.95
C104SMA	4' RG58/U Extension cable for PL-259. 90 degree SMA Male & SO-239	\$16.95
C105SMA	5' RG58/U Extension cable for C101/C101NMO. 90 degree SMA Male	\$16.95
C110BNC	10' RG316 Extension cable for C101/C101NMO. Use front radio installations. BNC male	\$29.95
C110SMA	10' RG316 Extension cable for C101/C101NMO. Use front radio installations. SMA male	\$29.95
C110	10' mini-8/RG8X extension cable for C101/C101NMO. Use front radio installations.	\$19.95
C211	Combination of C101 and C110, 16.5 feet cable assembly	\$49.95
C213S	UHF base, 13.5' RG316 Teflon Coax with PL-259	\$44.95
C213SNMO	NMO base, 13.5' RG316 Teflon Coax with PL-259	\$45.95
CRM	Stainless steel right angle mount with U-bolt	\$16.95
DPK-4NM-N	Type N Magnet. 13'5mm coax w/Type-N plug. Good to 1300 MHz.	\$54.95
HRKS	Adhesive backed UHF mount, 13.5' RG316 teflon coax with SMA and PL-259 adapter	\$69.95
K400-3/8C*	Special mount for 3/8x24 thread Antenna. 6.5 feet RG316 w/PL-259	\$73.95
K400C*	Deluxe mount with UHF type base. 6.5 feet RG-316 Teflon coax w/PL-259	\$73.95
K400CNMO*	Deluxe mount with NMO type base. 6.5 feet RG-316 Teflon coax w/PL-259	\$73.95
K400S	Deluxe mount with UHF type base. 13.5 feet RG316 w/SMA (PL-259 adapter included)	\$79.95
K400SNMO	Deluxe mount with NMO type base. 13.5 feet RG316 w/SMA (PL-259 adapter included)	\$79.95
K412C	Trunk/hatchback mount. UHF base, 6.5' Teflon coax w/PL-259. 45" max	\$59.95
K412CNMO	Trunk/hatchback mount. NMO base, 6.5' Teflon coax w/PL-259. 45" max	\$59.95
K412S	Trunk/hatchback mount. UHF base, 13.5' RG316 coax w/SMA (PL-259 adapter included)	\$69.95
K412SNMO	Trunk/hatchback mount. NMO base, 13.5' RG316 coax w/SMA (PL-259 adapter included)	\$69.95
K515S	Deluxe luggage carrier mount. UHF base. 13.5 ft RG316 w/SMA (PL-259 adapter included)	\$69.95
K515SNMO	Deluxe luggage carrier mount. NMO base. 13.5 ft RG316 w/SMA (PL-259 adapter included)	\$69.95
K540KM	Deluxe Mirror/Luggage rack mount. Black, adjustable. 13' RG58C/U with PL-259	\$59.95
K550KM	Deluxe mini van luggage rack mount. Black, adjustable. 13' RG58C/U with PL-259	\$69.95
K550L	Oversize version of K550	\$46.95
K600M	Tilt angle (0-9 degrees) trunk mount. Black. RG-188 and low loss 7mm cable.	\$59.95
K600S	Tilt angle (0-9 degrees) trunk mount UHF base. 13.5' RG316 with SMA (PL-259 adapter included)	\$62.95
K702M	Deluxe low-profile magnet/suction mount. 6.5" diameter, 13' RG58 & PL-259	\$49.95
K9000LRM	Motorized mount for luggage rack. Use C-series cable assemblies	\$119.95
K9000LRC	Same with oversize K515 hardware	\$119.95
K9000TM	Motorized mount for truck lid. Use C-series cable assemblies	\$119.95
SPM35	UHF type base on heavy 1.5 lb/4" magnet, 13'5mm coax with PL-259	\$44.95
SPMNMO	NMO type base on heavy 1.5 lb/4" magnet, 13'5mm coax with PL-259	\$49.95



MOBILE ANTENNAS



LARSEN[®]

ANTENNAS

Choosing Your Larsen Mobile Antenna

Choose your antenna configuration based on the frequency, base type (e.g., magnetic mount) and thread type (e.g., NMO). Keep in mind that it is necessary to select a base with the same mounting style as the antenna.

Typical bases and styles are shown below.

Thread Types

These are examples of each of the thread types. Select one and then select the base.



Mount Configurations

In addition to the popular Motorola 3/4" (NMO) mounts shown here, mobile antennas for the Larsen mount (LM) and PO mount (PO) are excellent choices for amateur use. Each of these mounts comes in one of the thread types:

NMO K premium quality rooftop.

NMO NMR



NMO MMR mag mount, 80# pull strength.

NMO TLP heavy duty trunk lid.

NMO TMB electropolished trunk gutter bracket.

NMO HF for low or high frequencies (pull center pin and insulator for high frequencies).

NMO HFTHK NMO thick mount (surfaces to 1/2" thick) high or low frequencies.



Magnetic Mount BNC MM BNC

Connectors: BNC on the mag and coax.
Coax: RG 58 A/U, 12'

NMO Series Antennas

Select An Antenna

Once the base and thread type are selected, the final step is to choose the antenna.

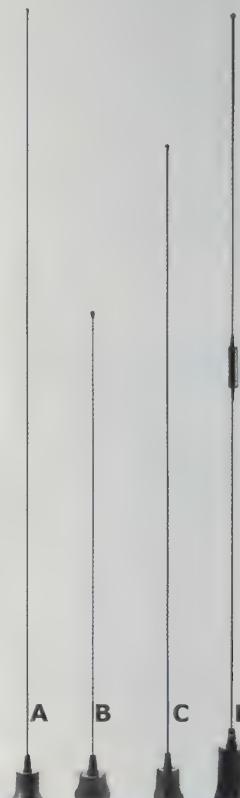
All Larsen mobile antennas meet the industry's most demanding specs for electrical efficiency and mechanical durability.

Gain antennas are made of a coil and a whip. Quarter wave antennas are just a whip.

- Colors: Black coil base, chrome or all black whip.
- Made in the USA!
- 1-year No-Nonsense warranty™.

A. NMO 150 B (2m)

Frequency.....144-174 MHz
Gain.....3 dBi
Electrical.....5/8 Wave
Height.....49"



B. NMOQ C

Frequency.....144-448 MHz
Gain.....0 dB
Electrical.....1/4 Wave
Height.....22" max

C. NMO 220 B (1.25M)

Frequency.....220-225 MHz
Gain.....3 dBi
Electrical.....5/8 Wave
Height.....32"

D. NMO 2/70

Frequency.....144-148 MHz
.....442-448 MHz
Gain.....3.8 dBi VHF
.....5.2 dBi UHF
Electrical.....Center Loaded
.....1/2 wave VHF, 5/8 UHF
Height.....34 3/4"

Scanner Antenna

Tri-Band

NMO 150/450/800

This is a great antenna for scanner operation. It is NOT tunable for amateur operation.

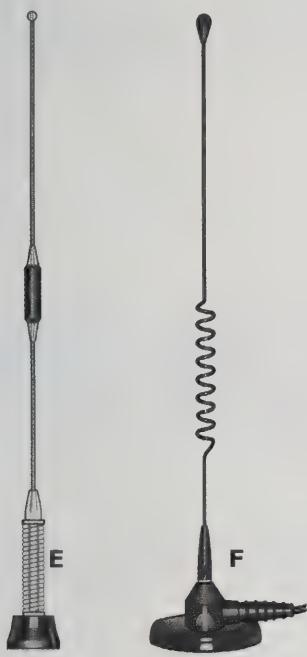
Frequency.....150-165 Mhz
.....450-470 Mhz
.....806-950 Mhz
Gain.....2.14 dBi ± 1dB
Mount.....NMO
Height.....16.5"



Dual Band Antennas

Larsen dual band antennas provide excellent performance on 2m and 70cm. Each antenna is factory preset to guarantee optimal performance with no tuning required.

- A range of dual band configurations is available.
- Kulrod copper-plated 17-7 stainless steel rods for greater transmit range.
- Soldered contacts.
- Premium materials and construction provide superior electrical performance and mechanical durability.
- 1-year No-Nonsense Warranty™



E. NMO 2/70 SH

Frequency.....	144-148 MHz
	440-450 MHz
Gain.....	Unity
Power.....	100 watts
Electrical.....	VHF Center Loaded: 1/4 wave
	UHF Center Loaded: 3/4 wave
Base.....	NMO UF base B w/ spring
Height.....	17"

F. MM 2/70 PL

Frequency.....	144-148 MHz
	440-450 MHz
Gain.....	Unity
Power.....	100 watts
Electrical.....	VHF Center Loaded: 1/4 wave
	UHF Center Loaded: 3/4 wave
Connector.....	PL-259 Installed
Base.....	3" Round Magnet
Pull Strength.....	54 lb.
Weight.....	1 lb.
Height.....	17"

On-Glass Antennas

Larsen's advanced design techniques in glass-mount antennas result in superior transmit range plus tremendous mechanical durability. Glass mount performance is nearly identical to rooftop mounts, with no holes to drill. Properly installed on-glass antennas grip for years under demanding conditions, yet are easy to remove and remount.

Dual Band KG 2/70 CX-PL

The KG 2/70 is a VHF half-wave and a UHF collinear. It comes with 14 feet of RG-58/U coax.

The antenna installs easily on any flat surface. Remove the whip without tools for car washes or low garages.



Single Band KG 144 PL

G. KG 2/70 CX-PL	Frequency.....	144-148 MHz
		442-448 MHz
	Gain.....	2.4 dB VHF
		4.5 dB UHF
	Power.....	50 watts
	Electrical.....	1/2 wave collinear
	Base.....	PL-259 (loose)
	Height.....	32-3/4"

H. KG 144 PL

Frequency.....	144-148 MHz
	442-448 MHz
Gain.....	2.4 dB VHF
	50 watts
Power.....	1/2 wave
Electrical.....	PL-259 (loose)
Base.....	1 lb.
Height.....	45"

In-Building / Public Safety

132 - 174 MHz PSIBVHF



Features

- Wide bandwidth VHF 132-174 MHz operation.
- Aesthetically pleasing: 1.5 mm (0.060 inch) thickness to ceiling.
- VSWR < 2:1.
- Optimized to low-frequency in-building environments.
- 15 x 15 inch (380 x 380 mm).

Applications

- In-building repeater systems.
- Bi-directional amplifier.
- Police, fire, government.
- Low profile ceiling mounting.
- Enhanced for in-building: gain-set to IB environment; multi-floor coverage.
- Avoids the nulls of traditional dipoles.

UHF version also available- PSIBUHF



Installed antenna fits flush with ceiling.

132 -174 MHz 380-570 MHz 700-960 MHz PSIBVU78

Features

- Wide bandwidth VHF, UHF 132-174 MHz, 380-570 MHz, 700-960 MHz.
- Aesthetically pleasing: 1.5 mm (0.060 inch) thickness to ceiling.
- VSWR < 2:1.
- Optimized to low-frequency in-building environments.

Applications

- In-building repeater systems.
- Bi-directional amplifier.
- Police, fire, government.
- Low profile ceiling mounting.
- Enhanced for in-building: gain-set to IB environment; multi-floor coverage.
- Avoids the nulls of traditional dipoles.

VHF/UHF ANTENNAS



Comet Dual-Band Antennas



Model	Bands	Gain	Max PWR Watts	Connector	Weight lb' oz"	Length ft' in"	Max Wind Speed MPH	HRO Price
Dual Band Base Station Repeater Antennas								
GP-9*	2m/70cm	8.5/11.9	200	SO-239	5'11"	16'6"	90	\$214.95
GP-9N*	2m/70cm	8.5/11.9	200	N	5'11"	16'6"	90	\$209.95
GP-6*	2m/70cm	6.5/9.0	200	SO-239	3'8"	10'5"	90	\$149.95
GP-3*	2m/70cm	4.5/7.2	200	SO-239	2'12"	5'11"	112	\$99.95
GP-1	2m/70cm	3.0/6.0	200	SO-239	2'	4'2"	135	\$74.95
Dual Band Mobile Antennas- All Black Anodized								
SBB-7/SBB-7NMO	2m/70cm	4.5/7.0	70	PL/NMO	-	4'7"	-	\$79.95
SBB-5/SBB-5NMO	2m/70cm	3.0/5.5	120	PL/NMO	-	3'2"	-	\$58.95
SBB-2/SBB-2NMO	2m/70cm	2.15/3.8	60	PL/NMO	-	20"	-	\$42.95
B-10M/B10NMO	2m/70cm	-/2.15	50	PL/NMO	-	12"	-	\$42.95

*Some longer antennas require additional freight

Comet Tri-Band Antennas

Model	Bands	Gain	Max PWR Watts	Connector	Weight lb' oz"	Length ft' in"	Max Wind Speed MPH	HRO Price
TriBand Base Station Repeater Antennas								
GP-15**	6m/2m/70cm	3/6.2/8.6	200	SO-239	2'15"	7'11"	90	\$169.95
GP-98**	2m/70cm/23cm	6.5/9.0/13.5	100	N-Female	3'6"	9'4"	90+	\$189.95
CX-333**	2m/220/70cm	6.5/7.8/9.0	120	SO-239	3'10"	10'2"	112	\$169.95
TriBand Mobile Antennas								
SBB-15**	6m/2m/70cm	2.15/4.5/7.2	120	PL-259	-	4'10"	-	\$84.95
SBB-97	2m/70cm/23cm	3.0/6.8/9.6	100	N-Male	-	3'3"	-	\$84.95
SBB-224	2m/220/70cm	2.15/3.2/5.5	150	PL-259	-	3'1"	-	\$69.95
SBB-224 NMO	2m/220/70cm	2.15/3.2/5.5	150	NMO	-	3'1"	-	\$69.95
HF Antennas								
UHV-6**	40/(20*)/(17*)15/10/6 2m/70cm	HF 0 dBi 2m 2.15 dBi 70cm 5.5 dBi	120 W SSB HF 100 W FM on 6-70cm	PL-259	Max 1'4"	Max 6'4"	-	\$169.95
L-14*	Opt 20m coil for UHV-6						-	\$31.95
L-18*	Opt 17m coil for UHV-6						-	\$29.95
L-3.5*	Opt 75/80m coil for UHV-6						-	\$34.95
CHA-250B**	Ground Plane 3.5-57 MHz		150 W SSB HF 125 W CW	SO-239	7'11"	23'8"	67.5	\$389.95

*For the UHV-6 optional bands.

**Some longer antennas require additional freight.

6 Meter Antenna

Model	Description	Freq	Gain	F/B	Max Power Watts	Conn	SWR	Length ft' in"	HRO Price
CA-52HB4**	4 element beam	50-54 MHz	-	19 dB	400 W PEP	SO-239	<1.5:1	10'6" boom	\$129.95

ANTENNAS/DUPLEXERS



2 m and HT Antennas

Model	Bands	Gain	Max Pwr Watts	Connector	Length Ft' in"	HRO Price
Single Band Antennas						
SBB-25/SBB-25NMO	2m	4.1	100	PL-259/ NMO	4'8"	\$48.95
HT Antennas						
CH-32 Mini Antenna	2m/70cm	-	10	BNC	1.75"	\$29.95
MH-510	6m/2m/70cm	0/0/3.2	10	SMA	20.75"	\$37.95
HT-224	2m/220/70cm	1.3/1.4/1.8	10	SMA	11"	\$39.95
SMA-501 Mini Antenna	2m/70cm	-	10	SMA	1.5"	\$29.95
SMA-3	2m/70/33cm	1.2/1.7/3.4		SMA	9.75"	\$39.95
SMA-24/SMA-24J	2m/70cm	2.15/5.3	20	SMA/Rev SMA	17.5	\$24.95
BNC-24	2m/70cm		20	BNC	17.5	\$24.95
SMA-503/SMA-503J	2m/70cm	-	10	SMA	8.5"	\$29.95
CH-75	2m/70cm	-/3.2	50	BNC	14.75	\$24.95
SH-95	2m/70/23cm	1.5/2/5.5	10	BNC	15"	\$34.95

Comet High Power Duplexers and Triplexers

Inc-alloy, die-cast, twin cavity, low input loss, high-isolation, and high-power. Modernize your station with Comet high-performance antenna products.

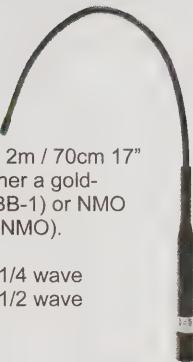
Model	Port	Freq MHz	CW Watts	PEP Watts	Loss dB	Isol dB	Mix Conn	Port Conn	HRO Price
CF-416A (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.15 0.25	60 60	SO-239	PL-259 w/ leads PL-259 w/ leads	\$49.95
CF-416C (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.15 0.25	60 60	N-Female	PL-259 w/ leads N-Male w/ leads	\$54.95
CF-4160I (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.1 0.2	60 60	SO-239	PL-259 w/o leads N-Male w/o leads	\$48.95
CF-4160K (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.1 0.2	60 60	SO-239	PL-259 w/o leads PL-259 w/o leads	\$48.95
CF-416B (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.15 0.25	60 60	SO-239	PL-259 w/ leads N-Male w/ leads	\$49.95
CF-706A (2m/70cm)	LPF HPF	1.3-75 75-470	175 175	350 350	0.5 0.5	40 40	SO-239	PL-259 w/ leads PL-259 w/ leads	\$69.95
CF-530 (6m/125-470)	LPF HPF	1.3-90 125-470	350 350	600 600	0.2 0.2	45 45	SO-239	PL-259 w/ leads PL-259 w/ leads	\$74.95
CF-530C (6m/125-470)*	LPF HPF	1.3-90 125-470	350 350	600 600	0.2 0.2	45 45	PL-259	SO-239 w/o leads SO-239 w/o leads	\$74.95
CF-360A (10m/6m)	LPF HPF	1.3-30 50-470	350 350	600 600	0.2 0.2	45 45	SO-239	PL-259 w/ leads PL-259 w/ leads	\$69.95
CFX-4310C (2m/70cm/1.2)	LPF BPF HPF	1.6-60 100-150 350-500 840-1.4	600 450 300 200	1KW 800 500 0.3	0.15 0.25 0.25 0.3	50 50 50 50	N-Female	PL-259 w/o leads PL-259 w/o leads N-Male w/o leads	\$79.95
CFX-514 (6m/2m/70cm)	LPF BPF HPF	1.3-90 130-200 380-500	450 450 300	800 800 500	0.2 0.25 0.3	55 55 55	SO-239	PL-259 w/ leads PL-259 w/ leads PL-259 w/ leads	\$79.95
CFX-514J (6m/2m/70cm)	LPF BPF HPF	1.3-90 130-200 380-500	450 450 300	800 800 500	0.15 0.2 0.25	55 55 55	SO-239	SO-239 w/o leads SO-239 w/o leads SO-239 w/o leads	\$79.95
CFX-324A (2m/220/70cm)	LPF BPF HPF	1.3-150 200-320 390-500	350 350 350	600 600 600	0.2 0.25 0.3	40 40 40	SO-239	PL-259 w/ leads PL-259 w/ leads PL-259 w/ leads	\$88.95
CFX-324B (2m/220/70cm)	LPF BPF HPF	1.3-150 200-320 390-500	350 350 350	600 600 600	0.2 0.25 0.3	40 40 40	SO-239	PL-259 w/o leads PL-259 w/o leads PL-259 w/o leads	\$85.95

Dual Band

2 m / 70 cm Mobile Antenna NMO Connector CA-2x4SRNMO

Comet's popular CA-2x4SR broadband mobile antenna is now available with an NMO connector. Black anodized finish. 3.8 / 6.2 dBi gain. HRO Price \$69.95

Flexible Dual Band SBB-1



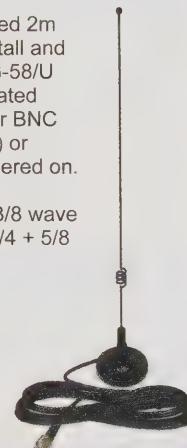
Convenient, very flexible 2m / 70cm 17" antenna. Comes with either a gold-plated PL-259 (Model SBB-1) or NMO connector (Model SBB-1NMO).

Gain 146 MHz: 1.5 dBi 1/4 wave
Gain 446 MHz: 2.5 dBi 1/2 wave
Max Power: 60 watts
VSWR: 1.5:1 or less
HRO Price: \$42.95

Dual Band Magnetic Mount M-24

Economical black anodized 2m / 70 cm antenna is 19.5" tall and comes with 13 feet of RG-58/U coax and either a gold-plated PL-259 (Model M-24M) or BNC connector (Model M-24B) or Model M-24S (SMA) soldered on.

Gain 146 MHz: 1.7 dBi 3/8 wave
Gain 446 MHz: 4.1 dBi 1/4 + 5/8 wave
Max Power: 80 watts
VSWR: 1.5:1 or less
Impedance: 50 Ohm
HRO Price: \$39.95



2M/70CM

All Female Duplexer CF-4160N

1.3-170 / 350-540 MHz duplexer with three N-female connectors allows the user to attach their own low loss jumpers in the length needed.
HRO Price: \$58.95



HF ANTENNAS



Mounts



Vehicle Specific Antenna Brackets

These stainless-steel no-holes-to-drill mounts use an existing fender bolt under the hood. A 3/4-inch hole accepts a standard NMO type connector or use Comet UHF connector mobile cable assemblies. Specific mounts for most popular trucks and SUVs: Chevrolet, Ford, Dodge, GMC. Call HRO for compatibility. Pictured: DG2ANTPF Dodge Ram 1500 2009-2014 HRO Price: \$19.95

Universal Mount CP-5M / CP-5NMO

These universal mounts use the heavy-duty RS-730 lip bracket. Each includes 5 meters (16' 6") of deluxe 2-step coax and an antenna mount connector: gold-plated PL-259 on coax end with detachable barrel for easy installation. 18-inch lead of mini RG-174 coax for easy entry through the weather seal. Choose the model that has the connector for the antenna you are using. HRO Price: \$69.95

Comet Mobile Mounting Systems

Comet has a wide variety of mobile mounts. Choose the mount and coax cable assembly that best fits your personal needs. All Comet cables have detachable connectors.

Model	Description	HRO Price
Mounts with Coax Cable Installed		
CP-5M	Universal multi-angle lip mount w/deluxe cable SO-239/PL-259 Connector	\$69.95
CP-5NMO	Same as CP-5M but with NMO/PL-259 Connector	\$69.95
HD5-3/8-24	3/8-24 heavy duty lip mount w/ PL-259 Connector	\$69.95
LD-5M	Light duty lip mount, 16'4" deluxe cable assembly, UHF Connector	\$55.95
CM-5M	Standard heavy-duty mag mt w/ RG-58A/U, coax, UHF connector, max antenna height 4 ft	\$24.95
Mounting Brackets Only, No Coax		
RS-840	Heavy duty lip mount, low profile, accepts SO-239 connector	\$36.95
RS-730	Heavy duty universal lip mount, accepts SO-239 connector	\$32.95
RS-720	Medium duty universal lip mount, accepts SO-239 connector	\$29.95
RS-720NMO	Medium duty universal lip mount, accepts NMO connector	\$29.95
RS-520	Light duty universal lip mount, accepts SO-239 connector	\$29.95
Coax Cable Assemblies		
CK-3M5	17 foot high-quality cable includes 12" RG-188 to avoid water leak/cable damage. UHF Connector	\$42.95
CK-3M	Same as CK-3M5 but 9'9" of deluxe cable assembly, UHF Connector	\$35.95
CK-5N	13'6" of deluxe 2-step cable assembly, N-Connector	\$49.95
5D4N	13'6" low loss (2400 MHz) coax cable, N-Connector	\$34.95
3D4N	13'6" low loss (1200 MHz) coax assembly, N-Connector	\$32.95
Antenna Connector Adapters		
AD-25M	Turns an SO-239 mount into an NMO mount	\$14.95
AD-15M	Turns an NMO mount into an SO-239 mount	\$17.95
AD-10N	Turns an NMO mount into an N-Female mount	\$17.95

HF Antennas

3.5 - 50 MHz 9-Band Telescoping Antenna HFJ-350M



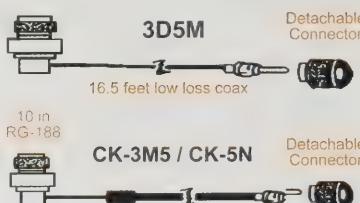
- Breaks down into three convenient sections for additional portability.
- Quickly and easily change frequency by changing plug to the desired band
- 1/4λ Base Loaded Antenna

- For best performance, it's recommended to use an antenna tuner and counterpoise.
- Base connector is a PL-259.
- Max Power: 75 W SSB 3.5 MHz, 100 W SSB 7-50 MHz.

HRO Price: \$109.95

Window Gap Jumper CTC-50M

This device crosses the space between window frames. The frequency range is up to 1.3 GHz with SO-239 connectors. Max power HF100 W PEP, VHF 60 W, UHF 40 W, low loss, 50 ohm impedance. HRO Price: \$54.95



RG-188 provides easy entry into the vehicle from an exterior mount. 13 feet very low loss coax.

Rack Mount RS-660U

This new roof-rack mount opens wider than the old version - up to 2.5 inches - and supports bigger antennas.

HRO Price: \$37.95



This broad-band, compact, rotatable dipole offers excellent performance even when mounted only 10-15 ft. above ground in a V shape. Heavy duty hardware and 2.5 kW balun are included. During assembly the user chooses any of the three pre-drilled holes to tune the 20/15/10m SWR dips to the low-mid- or upper-band ranges simultaneously. 40 meters TX bandwidth tunes independently of the other three bands.

- Length "V" shape 24'5", Horizontal 33' 10".
- VSWR less than 1.5:1 or less after tuning.
- Impedance 50 ohms. Stainless hardware.
- Wind load 3.01 sq ft.
- Max Power 1000 W, SSB / 500 W FM.
- SO-239 Connector.

HRO Price: \$339.95

40 m - 70 cm Mobile Antenna UHV-6

Without HF coils attached, the UHV-6 is a tribander for 6m/2m/70cm. The top of the element has a threaded socket for the 40m, 15m, or 10m coils (included), making the UHF-6 a quad-band antenna.

- Optional coils for 80m, 20m, 17m.
- Easy to mount and configure.
- Fold-over hinge included.
- GAIN on 2m: 2.15 dBi.
- GAIN on 70cm: 5.5 dBi.
- Length 48" to approx. 76".

HRO Price \$169.95

10/6/2 m & 70 cm Quad Band UHV-4

Developed for the Yaesu FT-8900. The 10m and 6m bands tune independently and will tune for SSB and FM. Length approx. 54". HRO Price: \$119.95



Telescopic Masts

These portable, temporary telescopic fiberglass masts extend to the sky! Just pull out each section and twist to lock. Select from five models, 20 to 43 feet. Each mast collapses to an acceptable height for true portability. These high-strength fiberglass masts are super lightweight – the largest weighs just 7.7 lb. Twist and Lock sections allow quick pull-up and take-down. Use them while traveling, camping – at hotels, hamfests, field day, DX-peditions.



MFJ-1917

The largest mast can be used for a full-time permanent wire installation or small, lightweight beam or vertical. Put up a full size inverted V, dipole or vertical antenna in minutes and get the height you need to QSO with anyone, anywhere. Use multiple telescopic masts to construct other types of antennas like loops, quads, rotatable dipoles even beams. The ideas are endless!

MFJ-1910 33 ft., light duty w/top tie ring.

MFJ-1911 20 ft., light duty w/top tie ring.

MFJ-1913 28 ft., lightweight w/top tie ring.

MFJ-1915 25 ft., for heavy duty use.

MFJ-1916 34 ft., for heavy duty use.

MFJ-1917 43 ft., heavy duty w/top tie ring.

Duplexers/Triplexers

MFJ-916B

Use HF or 2 meter / 440 MHz antennas with separate HF or 2 meter / 440 MHz rigs without a built-in duplexer. Low loss SO-239s, 50 ohm ports, 200 watts PEP.



MFJ-916BN with N type connector.

MFJ-916BC with coax pigtailed terminated with PL-259 connectors.

MFJ-4926S Triplexer for 1.6-60, 110-170 and 350-570 MHz. SO-239 connectors.

MFJ-4926C Triplexer for 1.6-60, 110-170 and 350-570 MHz. Pigtail PL-259 connectors.

MFJ-4936S Triplexer for 1.6-150, 220-225 and 400-550 MHz. SO-239 connectors.



Window Feed-Thru

Weather-proof antenna feed-thru panels mount in your window sill to let you bring all your antenna connections into your hamshack without drilling holes through walls. Simply place in window sill and close window.

One cut customizes it for any window up to 48 inches. Use horizontally or vertically. Real Western Red Cedar wood is naturally resistant to rot, decay and insects – lasts longer, maintenance-free. Pitch and resin free for a wide range of beautiful finishes or leave it in its naturally beautiful raw finish. Edges are sealed by weather-stripping to insulate against all weather conditions.

All are 3/4" D x 3-1/2" H x 48" W, except for MFJ-4605, which is 3/4" D x 7" H x 48" W. Inside / outside stainless steel plates bond all coax shields together to ground connection. Stainless steel ground post brings outside ground connection inside.

MFJ-4602

Three SO-239 Teflon® coax connectors let you feed HF / VHF / UHF antennas. High voltage ceramic feed-thru insulators bring 450 / 300 ohm balanced lines into your hamshack. Ceramic feed-thru insulator for longwire or random wire. Stainless steel ground post.

MFJ-4603

Four 50 ohm Teflon® SO-239 coax connectors let you feed HF / VHF / UHF antennas at full legal power limit.

A 50 ohm Teflon(R) coax N-connector lets you use any antenna up to 11 GHz, including 450 MHz, UHF, satellite, moon bounce and 2.4 / 5.8 GHz Wi-Fi antennas.

A 75 ohm, 1 GHz F-connector makes it easy to bring in television, satellite, HD, cable TV and FM radio signals.

A pair of high-voltage ceramic feed-thru insulators lets you bring in 450 / 300 ohm balanced lines directly to your antenna tuner.

- A random / long wire antenna ceramic feed-thru insulator
- 5-way binding posts let you supply 50 volts / 15 amps DC / AC power to your outside antenna tuners / relays / switches
- Stainless ground post brings in ground connection, bonds inside / outside stainless steel panels together and drains away static charges
- MFJ's exclusive Adaptive Cable Feedthru™ lets you bring in rotator / antenna switch cable, etc. without removing connectors (up to 1-1/4" X 1-5/8"). Adapts to virtually any cable size. Seals out rain, snow, adverse weather.

MFJ-4601

Has six high quality Teflon® SO-239 connectors for HF / VHF / UHF coax-fed antennas and a stainless steel ground post. Handles full 1500 watt legal limit.

MFJ-4601N

Like MFJ-4601, but has N-type connectors.

MFJ-4600

Has four sets of ceramic feed-thru insulators and two SO-239 connectors.

MFJ-4604

Has five adaptive cable feed-thrus – two for connectors up to 1-1/4" x 1-5/8" and three for UHF / N size coax connectors. Adapts to virtually all cables used in ham radio. Seals out weather.

MFJ-4605

Combines MFJ-4603 and MFJ-4604! Gives every connection you'll ever need and more – without drilling holes in wall!

Antenna Insulators

MFJ-16C06

6-pack of glazed ceramic center / end insulators are extra strong – will not break with long antennas and will not arc-over or melt even under full legal power. Molded ridges give extra-long path to prevent high-voltage breakdown. Smooth 5/16" wire holes prevent wire damage. Center or end insulator for dipoles, doublets, G5RVs, guy wires, vees, etc.

MFJ-16A06

Glazed ceramic egg insulator, has 7/16" holes. 9/64" diameter by 2-1/8" length. High power.



HF Magnet Mounts

MFJ-335BT

5" magnet mount with 17' coax.



MFJ-336T
Tri-magnet
HF mount with
17' coax.

ANTENNAS/ROTATORS

MFJ**Octopus Antenna****Octopus 4-Band Antenna****Reach out for big DX!**

Choose your favorite four bands! Super easy to assemble! Use metal pole or telescopic mast up to 1-inch, easily secured, tightens with thumbscrew. And... just screw in your HamSticks™! (See page 94)

Rotate with a small TV rotator (see Hy-Gain AR-500, \$149.95) or just ground mount for omni-directional.

Uses eight HamSticks™ (two of the same for each band). Tough octagonal enclosure has eight 3/8" x 24 threaded connectors for Hamsticks.

Has built-in balun and a super strong base tube insulator made of fiberglass filled ABS.

Put this antenna up in minutes! Makes for a great stealth, portable, campground, or permanent base antenna. Super lightweight, 14-foot diameter. HamSticks™ break down to about four feet for easy storage.

MFJ-2100 Mounting bracket only
HRO Price: \$109.95

MFJ-2104 Mounting bracket with your choice of four (two each) 250 W HamSticks™
HRO Price: \$279.95

MFJ-2104H Mounting bracket with your choice of four (two each) high power 600 W HamSticks™.
HRO Price: \$519.95

hy-gain**Rotators****HAM-V**

For medium antenna arrays up to 15 square feet wind load. Includes the DCU-1 Pathfinder digital control unit. No more terminal strips. Features cinch connector plus 8-pin plug at the control box. Maximum mast size 2 1/16".

HRO Price: \$1119.95**HAM-IV**

The popular Ham-IV is designed for medium antenna arrays up to 15 square feet. It features a dual 98 ball bearing race for load bearing strengths and an electric locking steel wedge brake. Maximum mast size 2-1/16".

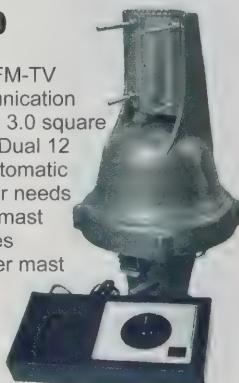
HRO Price: \$659.95**Tailtwister SERIES II**

This unit handles medium communications arrays up to 20 square feet wind load area. Available with the DCU-1 Pathfinder digital control box or standard analog control box. Has 138 ball bearings for large load bearing strength. Maximum mast size: 2-1/16".

HRO Prices:
T2X - \$809.95
T2XD - \$1249.95

**AR-40**

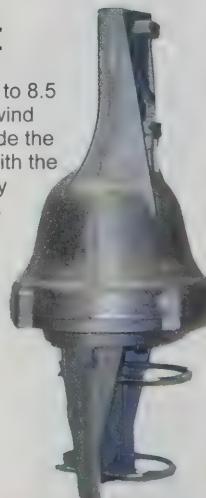
Especially for large FM-TV and compact communication antenna arrays up to 3.0 square feet wind load area. Dual 12 ball bearing race. Automatic position sensor never needs resetting. Maximum mast size: 2-1/16". Includes MSLD light duty lower mast support.

HRO Price: \$359.95**HDR-300A**

Choose this rotator for king-sized antenna arrays up to 25 square feet of wind load. Heavy-duty self-centering steel mast clamp and hardware. Digital display accurate to 1 degree.

HRO Price: \$1519.95**CD-45II**

The CD-45II handles up to 8.5 square feet of antenna wind load when mounted inside the tower or 5 square feet with the included MSLD light duty lower mast adapter. Has 58 ball bearing race. Maximum mast size: 2-1/16".

HRO Price: \$459.95

AZIMUTH/ELEVATION ROTATORS

hy-gain

Super Heavy Duty Rotators

Super strong, double worm gear drives, self-braking, extremely quiet motors, one degree position resolution, automatic digital controller. Up to 38 square feet wind load, 8,000 in/lb turning torque and 24,000 in/lb brake torque.
Plus 700 pounds vertical load!

Hy-Gain | RAS-1



Hy-Gain | RAS-2



Hy-Gain | REAL-1



Controller | RAS-1 & RAS-2



Azimuth and Elevation Rotators RAS-1 & RAS-2

Hy-gain offers RAS-1 and BIG RAS (RAS-2) super heavy-duty azimuth-elevation rotators. Same heavy-duty design as RAKs and includes the RAS-2C digital controller. RAS-2 has same specifications as RAS-1 below but with these super specs. Turning power: 5,000 inches per pound at all voltages. Vertical load: greater than 700 pounds. RAS-2 weighs 44 pounds.

HRO Prices:

RAS-1 including RAS-2CU controller	\$1619.95
RAS-1R rotator only	\$1279.95
RAS-2 including RAS-2CU controller	\$2199.95
RAS-2R rotator only	\$1939.95

Specifications

RAS-1 Specs	RAS-1 @ 12 V	RAS-1 @ 18 V	RAS-1 @ 24 V
Wind load area (approx)	30 sq ft.	30 sq ft.	30 sq ft.
Turning torque	1400 in/lb.	1800 in/lb.	3240 in/lb.
Brake torque	14,000 in/lb.	14,000 in/lb.	14,000 in/lb.
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	550 lb.	550 lb.	550 lb.
Rotation speed (360 degrees)	120 seconds	90 seconds	60 seconds
Precision, rotator weight	1 degree, 29 pounds	1 degree, 29 pounds	1 degree, 29 pounds
Rotation range (Az/EI)	360 az/180 degrees	360 az/180 degrees	360 az/180 degrees
Position sensor	Reed switch	Reed switch	Reed switch
Mast size bottom/elevation	2.6 bottom 2.0 elevation	2.6 bottom 2.0 elevation	2.6 bottom 2.0 elevation

Hy-Gain RAU-1



Econo SPID Rotator RAU-1

Spid's smallest rotator is a step up from mainstream rotators and provides excellent support for direct round mast mounting. Incorporates elevation rotator to provide full AZ/EL capability. Ideal for light duty 3-4 element antennas, short boom, 6-meter beams, and 2-Meter / 70 cm beam antennas.

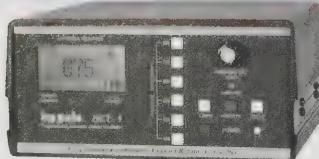
HRO Prices:

RAU-1 including RAK-ICU controller ..	\$879.95
RAU-1R rotator only	\$589.95

SPID ROTATORS

hy-gain

Rotator Controllers



For Hy-Gain DCU-3

Digital rotator controller allows you to program 6 beam headings. Gives fully automatic or manual control of your HyGain

Ham or T2X Rotators. Has USB / RS-232 ports for computer control. Adjustable LCD sleep time. Field upgradeable firmware. Press a memory button or dial in your beam heading or let one of the popular software platforms take control for you. Bright blue LCD. Available for 110 VAC or DCU-3X for 220 VAC. **HRO Price: \$459.95**

DCU-2 controller with fewer programmable memories.

For Yaesu YRC-1

Replace your Yaesu rotator control box with the YRC-1 rotator controller. Easy to use; dial in your beam heading and tap the GOTO button. Bright blue LCD shows current, dialed-in, and computer-controlled beam headings, and your call sign. USB port for computer control. Fast variable DC motor minimizes overshoot. For current Yaesu – DXA series rotators. **HRO Price: \$329.95**

YRC-3 is like the YRC-1 but adds 6 memories.



Economy Digital Controller for HY-gain, Ham II, IV, T2X, Yaesu, and many other common rotators



Hy-Gain MDS RC-1

The RC-1 is a direct replacement control box for almost all versions of Yaesu rotators. Get ALL these features at half the cost of similar digital controllers! **HRO Price: \$249.95**

- SSB, CW, RTTY, AM and FM modes.
- It is priced well below the repair cost of many factory control boxes.
- RC-1 uses slave power from existing Ham series, AC controllers (RC1-G, RC1-H). It is emergency and battery power compatible for DC models.
- You get automatic brake control on Ham series rotators and automatic speed control on DC powered rotators.
- A graphic LCD screen is large and bright blue for easy visibility. Huge beam heading digits!
- The "Go to" button gives you the reciprocal heading.
- Computer-controlled operation via the included USB (for RC1-Y) or serial ports let you use your favorite software programs. Field upgradeable firmware.
- Rugged aluminum for maximum RF shielding in a compact 5-1/4 wide x 3-1/2 height x 4-1/8 inches deep.
- Order RC1-Y for Yaesu; RC1-P for Spid; RC1-G and RC1-H for Hygain rotators.

HEAVY DUTY RAK-1



These super heavy-duty RAK rotators are designed with a simple double worm gear drive. This results in a super strong ultra-reliable rotator system with inherent self-braking. Each includes a precision automatic digital controller.

Turning is powerful, smooth, precise, and extremely quiet. The inherent self-braking action of its double worm gear drive positively stops it every time – it won't move!

It's fast! A high-torque DC gear motor rotates your antenna 360 degrees in just 60 seconds with 24 volts on the motor. The RAK rotators operate from 12 to 24 volts AC or DC. The higher the voltage, the higher the torque and the faster the turning speed – unique RAK feature.

HRO Prices:

RAK-1 including RAK-ICU controller .. \$1319.95
RAK-1R rotator only \$699.95

PRECISION RAK-2



It's simple to mount! Pipe mast mount on both ends allows coax cables to pass through the center of the rotator and prevents cable tangling and damage. Optional adapter plate mounting. See accessories section below.

It's precise! The included RAK-ICU controller has one degree resolution and a large 3/4 inch 4-digit easy-to-read soft green LED digital readout. Sealed reed switch sensor technology gives reliable all-weather operation and super tight tolerances with minimal play.

Tough and durable! Heavy-duty construction with 3/16" thick-wall steel pipe, ultra-durable steel housing.

HRO Prices:

RAK-2 including RAK-ICU controller .. \$1319.95
RAK-2R rotator only \$1099.95

Hy-Gain RAK-1 Specifications

RAK-1 Specs	RAK-1 @ 12 V	RAK-1 @ 18 V	RAK-1 @ 24 V
Approx wind load area	30 sq ft.	30 sq ft.	30 sq ft.
Turning torque	1400 in/lb.	1800 in/lb.	3240 in/lb.
Brake torque	14,000 in/lb.	14,000 in/lb.	14,000 in/lb.
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	550 lb.	550 lb.	550 lb.
Rotation speed 360 deg	120 sec	90 seconds	60 seconds
Precision	1 deg	1 deg	1 deg
Rotation range	720 deg	720 deg	720 deg
Rotator weight	16 lb.	16 lb.	16 lb.
Position sensor	Reed switch	Reed switch	Reed switch
Mast size top/bottom	2.0"/2.6"	2.0"/2.6"	2.0"/2.6"

Hy-Gain RAK-2 Specifications

RAK-2 Specs	RAK-2 @ 12 V	RAK-2 @ 18 V	RAK-2 @ 24 V
Approx wind load area	38 sq ft.	38 sq ft.	38 sq ft.
Turning torque	>5000 in/lb.	>8000 in/lb.	Contact Hy-Gain
Brake torque	24,000 in/lb.	24,000 in/lb.	24,000 in/lb.
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	>700 lb.	>700 lb.	>700 lb.
Rotation speed/360 deg	120 sec	90 sec	60 sec
Precision	1 or 0.5 deg	1 or 0.5 deg	1 or 0.5 deg
Rotation range	720 deg	720 deg	720 deg
Rotator weight	24 lb.	24 lb.	24 lb.
Position sensor	Reed switch	Reed switch	Reed switch
Mast size top/bottom	2.6 inches	2.6 inches	2.6 inches

YAESU
The radio



Hi-Tech Rotator G-2800DXA

The G-2800DXA is a high-technology rotator designed to turn the largest tower-mounted antenna arrays.

Medium Loads G-800DXA

The G-800DXA rotator is designed for medium to heavy loads and antennas up to 20 square feet, with control box resets.



Computer Controller GS-232B

The GS-232G rotator computer interface provides digital control of Yaesu rotators G-800DXA, G-1000DXA, G-2800DXA, and G-5500.

The GS-232B contains its own PIC18C452 micro-processor with ROM and RAM and 10-bit analog-to-digital converter. The 3 wire async serial line can be configured for serial data rates from 1200 to 9600 baud. The unit has a DB-9 male connector to connect to the RS232C COM port of your computer.

Supplied items include: control cable for the azimuth rotator (5 pin to mini DIN), control cable for the Az/EI rotator (dual 5 pin to DIN cable), DC power cable, and hook and loop fasteners. Requires 12 VDC @ 110 mA.

Yaesu Rotators Specifications

Model	Input Voltage	Motor Voltage	Rotation Time	Stationary Torque	Rotation Torque	Maximum Wind Load	Max Vert Load	Max Mast Size	Cable Type	Weight lb (kg)	HRO Price
G-450A	110 VAC	29-32 VAC	51 sec	217 ft lb.	39.8 ft lb.	10 sq ft.	242 lb.	2 in.	5-wire	7 (3.2)	CALL
G-800DXA	110 VAC	24 VDC	55 sec	3456 in lb.	43-79 ft lb.	17 sq ft.	440 lb.	2.5 in.	6-wire	10 (4.5)	CALL
G-1000DXA	110 VAC	24 VDC	55 sec	5200 in lb.	79 ft lb.	22 sq ft.	440 lb.	2.5 in.	6-wire	15 (6.8)	CALL
G-2800DXA	110 VAC	24 VDC	55 sec	20,832 in lb.	219 ft lb.	34 sq ft.	880 lb.	2.5 in.	6-wire	26 (11.8)	CALL
G-5500DC	110 VAC	22 VDC	58 sec	289 ft lb.	*	10.7 sq ft.	440 lb.	2.5 in.	6-wire	20 (9)	CALL

*Elevation 101 ft-lb, Azimuth 44 ft-lb.

Rotators

Yaesu's high quality rotators for amateurs include models for medium to large arrays and for satellite work. There are provisions for computer control.

Please contact your nearest HRO for more specifications and discount pricing on Yaesu products.

Large Loads G-1000DXA

The G-1000DXA is designed to handle bigger arrays up to 22 square feet. A great value.

VHF/UHF G-450A

The G-450A is ideal for smaller HF and VHF/UHF antennas. Features 360 degree radial compass display with overlap.



AZ/EL G-5500DC

This is the most popular azimuth and elevation rotator for satellite, moon-bounce or other space communications work. It provides horizontal and vertical antenna rotation in a single unit. The control box has two large meters, one showing elevation and the other azimuth. Meter aiming accuracy is within $\pm 4\%$. The G-5500 provides 180° elevation rotation with a rotation time of 67 seconds. A 360° azimuth rotation takes just 50 seconds. This rotator accepts up to a 2.5" mast, a maximum 1-5/8" horizontal cross-boom and 440 pounds of vertical load. Computer controllable with optional GS-232 computer interface.

HF Dipole Antenna

Pre-Tuned YA-30

This 83-foot broadband dipole provides optimum performance over 1.8-30 MHz. Usual requirements for an antenna tuner between the rig and antenna are eliminated by the unique broadband design. Handles 150 watts at an SWR of less than 1.9:1 on the amateur bands. Preassembled and pretuned. Can be installed as a horizontal flat-top, inverted-V, or sloper. 100 feet of RG-8X with PL-259 included.

HF Mobile Antenna

Motor Tuned HF/VHF/UHF ATAS-120A

The ATAS-120A provides HF/VHF/UHF coverage with automatic motorized tuning. Control radiator length from the transceiver for best SWR. Compatible with Yaesu's FT-100, FT-847, FT-857, FT-891, and FT-897.

HF Portable Antenna

Hand Tuned HF/VHF/UHF ATAS-25

The ATAS-25 has radiating elements covering amateur bands 10-40m, 6m, 2m, and 70cm. Mounts to a standard camera tripod (not included). Uses a manual tuning system. Dual frequency operation possible with a duplexer (not included). Antenna collapses to less than two feet to carry; expands to 7.2 foot maximum height. This is an ideal system to use with the FT-891, FT-818, FT-897, and FT-857 transceivers. Weight is 2.05 pounds.

TUBULAR CRANK-UP TOWERS



MA Series Crank-Up Masts

The premier MA-series crank-up Tubular Towers are designed to be both safe and

neighbor friendly. The slender design gives a clean, flagpole-like appearance and is rated at 90 mph winds per the IBC 2006 code. Per TIA/EIA specifications, adequate safety margins are included. International Building Code calculations are available for most models.

The MA-40 and 550 models require base kits comprised of a flat base, two $\frac{1}{2}$ " x 10" anchor bolts, and a 4 ft rotor mast with rotor plate. Comes standard with a wall bracket. No guying is required when tower is properly bracketed to the eave of your roof.

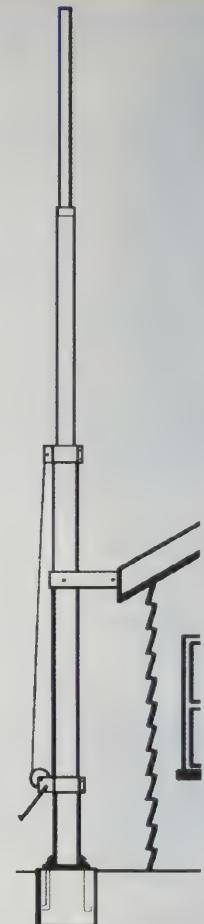
MA-series towers are completely self-supporting only when used with accessory MARB or MAB series bases. The MARB series rotator base allows the entire tower and antenna to be rotated from the base (rotator not included).

This allows easy rotator maintenance plus emergency hand rotation of the entire tower and antenna.

The MA-550MDP and 770MDP models include a heavy duty motor drive with positive pull down. The MDP models provide motorized raising and lowering of the tower. A remote control unit (RMC-1000) accessory is available that allows raising and lowering from your ham shack or other remote location.

All models without motor drives come standard with manual hand winches which have load actuated brakes for maximum safety. This feature prevents the winch from free-wheeling and causing injury to you or your installation in the event that you lose your grip during raising or lowering.

All steel used at US Tower conforms to ASTM specifications. All welding is done by certified factory personnel. All of our towers are factory tested by trained personnel before shipping.



MA-Series Crank-Up Towers

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
MA-40	40'	21'6"	2	245	3" sq.	4.5"	CALL
MA-550	55'	22'1"	3	435	3" sq.	6.625"	CALL
MA-550MDP*	55'	22'1"	3	620	3" sq.	6.625"	CALL
MA-770	71'	22'10"	4	645	3" sq.	8.0"	CALL
MA-770MDP*	71'	22'10"	4	830	3" sq.	8.0"	CALL

All towers will handle 10 square feet WLA antennas at 50 MPH winds.

*These tower requires purchase of MCL-100 or RMC-1000

TMM Series Compact Towers

The TMM series has a minimum retracted height of 11'4" (may vary, depending on rotator used) and a maximum height of 47' including mast. At the tower's retracted height, visual impact is reduced to a minimum and antenna servicing is made easier. Typically the tower and antenna are below the roof line of your home when the tower is fully retracted.

The TMM series towers are lightweight, freestanding crank-up towers that allow up to 20.7 square feet of antenna in 90 mph winds per TIA/EIA specifications. The TMM-433HD allows 31.8 square feet in 90 mph winds. These lightweight towers should provide many years of trouble free service. All of our towers

have a hot dipped galvanized finish inside and out.

The TMM-433SS and 541SS have a 10" top section which will permit the installation of the Yaesu G800 and G1000 rotators inside the top section. Oversized rotators will prevent full retraction of your tower. However, they may be used if full retraction is not required.

All TMM Series towers require base kits comprised of a hinged T-base and anchor bolts, but include load actuated winch, rotator plate, and eight feet of 2" OD x .120" antenna mast.

Crank-Up Tower Base Information

Foundations are designed in accordance with the International Building Code (IBC) for a "non constrained" condition using Class 5 soil. Alternate or custom foundation designs are available for an extra charge. Anchor rods may be ordered from US Tower. However, reinforcing steel and rebar are not provided. Welder's certified IAW AWS D1.1. Contact US Tower for additional information.

Because of wide variations throughout the country in zoning requirements and loading conditions (snow, wind, ice, etc.), it is the responsibility of the customer to make certain that his Tower conforms to all applicable codes. We recommend you obtain all necessary permits prior to purchase.

The Customer is Responsible for obtaining all local city or county building and zoning permits AND for taking the tower off the freight truck when it is delivered. Please arrange for adequate help.

Compact TMM-Series Crank-Up Towers

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
TMM-433SS	33' w/o mast	12'3"	4	315	10"	18"	CALL
TMM-433HD	33' w/o mast	12'3"	4	400	12.5"	20 7/8"	CALL
TMM-541SS	41' w/o mast	13'	5	430	10"	20 7/8"	CALL

All towers will handle 18 square feet WLA antennas at 50 MPH winds.

LATTICE CRANK-UP TOWERS

TX Series Freestanding Towers

US Tower's TX series crank-up towers are as strong or stronger than most competitors' heavy-duty models. The TX towers have 21 foot sections with 4 foot overlap to provide extra height and strength. In addition, the overlap helps prevent binding while lowering your tower in high wind conditions. The TX series towers have a large enough top section (12 1/2") to permit installation of most rotators inside the section for maximum strength while allowing the section to fully retract. Cross bracing at critical points on the tower ensures safety and additional strength. All crank-up towers have a heavy-duty, hot dipped galvanized finish both inside and out, which should provide many years of trouble free service.

The TX series towers come complete with rotator plate and Fulton hand winch, except MDP and MDPL models, which feature automatic load actuated brakes for maximum safety. Base kits are required, consisting of large steel anchor bolts and heavy-duty steel T-base that allows the tower to hinge on for easy installation. All T-bases will accept the TRX series raising fixtures for easy one-man installation. Other accessories include masts and motor drives. The TX-472MDP comes complete with MDP-750 motor drive with positive pull-down feature. The TX-489MDPL includes the MDPL-1000 motor drive and level wind feature. US Tower's TX series requires no guying. The wind loading is calculated at 90 mph.

TX Series Freestanding Crank-Up Towers

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
TX-438	38'	21'9"	2	355	12.5"	15"	CALL
TX-455	55'	22'6"	3	670	12.5"	18"	CALL
TX-472	72'	23'3"	4	1040	12.5"	21 5/8"	CALL
TX-472MDP*	72'	23'3"	4	1210	12.5"	21 5/8"	CALL
TX-489MDPL	89'	24'	5	1800	12.5"	25 5/8"	CALL

All towers will handle 18 square feet WLA antennas at 50 MPH winds.

*This tower requires purchase of MCL-100 or RMC-1000

HDX Series Heavy Duty

US Tower's HDX series heavy-duty crank up towers have up to 2.5x more wind loading capacity than others commonly advertised. This superior strength allows for large stacked arrays, while using our commercial type bases and anchor bolts that can be easily installed and vertically adjusted. All HDX series T-bases are designed to use our TRX series raising fixtures to make installations and antenna servicing a one man job.

US Tower carries many different sizes and strengths of masts to use as accessories with the HDX series towers. The HDX-572MDPL and 589MDPL motorized towers provide dual level wind, positive pull down and heavy

duty gear box features. The HDX-589MDPL comes complete with the MCL-100 limit switch package included. All towers using MDP-750 and MDPL-1000 motor drives must use either the RMC-1000 accessory limit switch package or the MCL-100, which allows the raising and lowering of your tower from the comfort of your ham shack or any remote location.

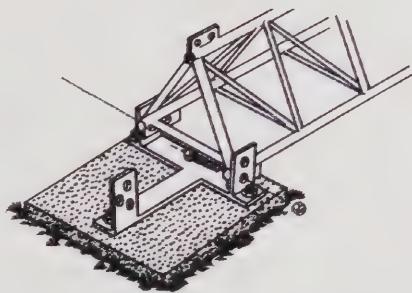
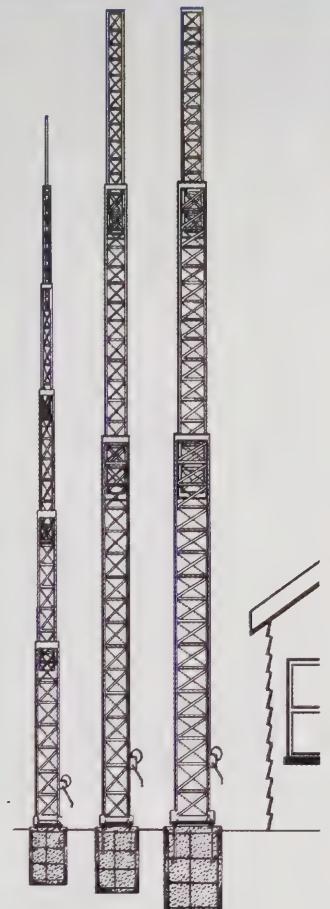
All HDX series towers come complete with rotator plate, but require base kits consisting of anchor bolts and heavy-duty T-base. US Tower's special T-base design allows the tower to hinge for easy installation. US Tower's crank towers require no guying. The HDX Series towers are rated at 90 mph winds.

HDX Series Heavy Duty Crank-Up Towers

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
HDX-538	38'	21'9"	2	600	15"	18"	CALL
HDX-555	55'	22'6"	3	870	15"	21 5/8"	CALL
HDX-572MDP*	72'	23'3"	4	1600	15"	25 5/8"	CALL
HDX-589MDPL	89'	24'	5	2440	15"	30 5/8"	CALL
HDX-689MDPL*	89'	24'9"	5	3400	18"	37 1/8"	CALL
HDX-5106MDPL*	106'	25'6"	6	3850	15"	37 1/8"	CALL

All towers will handle 30 square feet WLA antennas at 50 MPH winds. HDX-689MDPL rated at 60 square feet WLA of antenna at 50 MPH winds. HDX-5106MDPL rated at 35 square feet WLA of antenna at 50 MPH winds.

*These tower requires purchase of MCL-100 or RMC-1000



For more information about U.S. Towers and related accessories please contact your nearest Ham Radio Outlet store. Our salespeople are happy to answer any of your questions.

CRANK UP ALUMINUM MASTS



ALM SERIES

The ALM Series is a patented mast system designed and manufactured by US Tower Corp. The intent of the ALM Series is to provide a versatile and highly capable mast system that can be quickly transitioned for different uses.

Using lightweight aluminum construction, the ALM Series masts can be easily loaded into a vehicle, transported to a field event, and deployed using a number of mobile mast mount options including hitch mounts and drive-on bases.

With its high wind rating, the ALM Series can also be used as a permanently installed mast attached to a house, an out structure, or installed free-standing. No guying is required for any deployment configuration of the mast.

Whether the intent is to use the ALM Series as a mobile solution, a fixed solution or both, the low maintenance, high strength, weather resistant construction of the mast ensures that you will be prepared at all times with an easy-to-use cost-effective solution.

Features:

- Lightweight aircraft grade aluminum
- Rapid Deployment
- Corrosion resistant
- Ideal for temporary or permanent installations
- Built-in pivot clevis for easy tilt-up
- Adjustable height winch
- High-ratio winch
- High strength-to-weight ratio
- Low maintenance
- 4 1/2 ft, 2" O.D. antenna mounting mast with universal rotator mount plate

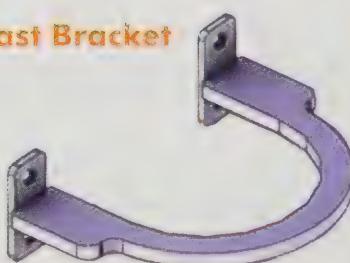
Options:

- Crank tilt-up raising feature (ALM-MAF)
- ALM rotating feature (ALM-MARB)
- Hitch mount fixture (ALM Hitch Mount)
- Wall mount fixture; 16" or 20" standoff arms
- Standalone base (ALM-MAB)
- Drive-on mast stand (15603-0004-1012)

Four Heights Available		
Height	Rated	Load
16 ft.	50 lb.	9 sq ft. @ 65 mph
21 ft.	50 lb.	9 sq ft. @ 65 mph
26 ft.	50 lb.	8 sq ft. @ 65 mph
31 ft.	50 lb.	8 sq ft. @ 65 mph



Mast Bracket



Mast Base



GENERAL INFORMATION

STORE HOURS

Ham Radio Outlet is open Monday through Saturday. Phone hours are 9:30AM to 5:30PM and store hours are 10AM to 5:30PM. We are closed for most major holidays.

EASY ORDERING

Each HRO store has a local phone number, a Toll-Free 800 number, a fax number and an email address. Our friendly and trained staff is eager to answer your questions and place an order for you. You can also shop 24/7/365 on our safe, secure website at <https://www.hamradio.com>.

SALES TAX

Ham Radio Outlet collects, remits, and reports sales tax in accordance with all state and local requirements. For more information go to https://www.hamradio.com/general_info_sales_tax.cfm.

PRICING

No matter if you shop online, in-store, or over the phone, you will find the same low prices. Many prices shown are below suggested list price and, in most cases, we offer significant discounts from retail pricing. Manufacturers constantly change prices, offer specials, or react to market conditions. Simply check online or call one of our stores and our staff will be happy to quote you the current selling price. Prices are subject to change without notice or obligation to the customer. Sorry, we cannot honor typos in this catalog or on our online web pricing.

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We accept Visa, MasterCard, American Express, Discover and PayPal both online and in-store. Money Orders, Cashier's Checks and Personal checks are also accepted. However, processing time may delay shipment by 10 days or more on unsecured funds.

When using a credit card for phone orders, please have the card in front of you since we will need specific card information. For your protection, we thoroughly investigate the validity of all credit card purchases and may require additional verification before shipment.

COD is by approval only. COD payments must be made by cashier's check or money order at the time of delivery. There is a small fee for COD shipments. Contact your local HRO for more information.

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Written purchase orders will be accepted from city, state, and federal agencies. Commercial organizations require pre-approval if credit terms or open account is requested. HRO quotes prices that require payment on receipt of merchandise. Please indicate that you require terms when calling for price quotes. Typically net terms are only offered to Fortune 500 companies, Federal, State, City and local government entities.

FAST SHIPPING

HRO continually strives to ship each and every order as quickly as possible. In most cases, the shipment will be made from the location nearest to you, if stock is available. Otherwise we will ship from any location, even multiple locations, to fulfill your order. HRO is trying to provide the quickest and most efficient shipment process in the industry!

DELIVERY

United States: HRO provides FREE ground shipping in the continental USA on most items over \$100. Items under \$100 incur a flat rate shipping charge based on current shipping costs and conditions.

For expedited, domestic shipments HRO offers a variety of 2 day or next day service at an additional cost. A quote for these charges can be provided upon request.

Alaska and Hawaii: Shipments can be shipped by UPS, FedEx, or the USPS. Contact your local HRO for more information.

Canada: We ship to Canada! Orders can now be shipped via UPS, FedEx, DHL or the USPS. Canadian shipping costs will be quoted and calculated on a per item basis. These costs will be added to your invoice. Contact us for additional details.

International Orders: We ship worldwide via UPS, FedEx, DHL or the USPS. Contact any of our stores with your needs. We can provide quotes and details for placing your foreign order. Payment methods include wire transfer, Visa, MC, PayPal, or check drawn in U.S. Funds from a U.S. bank. Shipments are made (depending on size) by UPS, FedEx, DHL, or International Mail. Some orders to some foreign countries cannot be insured to the full value.

Truck: On day of delivery, please be sure to have enough help, and/or proper equipment on hand for unloading merchandise. Truck drivers are NOT required to provide assistance. If you are not experienced at handling large, awkward items such as towers, antennas or amplifiers, please ask for properly trained people to assist you.

DAMAGED ITEMS

UPS or FedEx: If the item is obviously damaged, note this with the driver and refuse shipment. This item will be returned to HRO and another will be sent at no additional charge. If hidden damage is noted, contact UPS or FedEx as soon as possible. They will arrange pickup. Once the item is received by HRO, a replacement will be sent.

US Mail: Please contact our office immediately upon finding an issue.

Truck: If there is damage or the shipment is short, it is the customer's responsibility to file the claim with the trucking company. At the time of receipt of item, it is recommended that you have the driver write 'damaged' or indicate shortage on the bill of lading he gives to you. Be sure to have the same notation as well as driver's signature on his copy also.

LOST ITEMS

When your order is delivered, please carefully count items and if anything is missing, notify HRO at once. Occasionally, cartons shipped at the same time will arrive at their destination two or three days apart. If you notify HRO within 10 days, we will replace lost or damaged items after completion of proper documentation and acceptance by the shipping agency.

RETURNS

Products are not sold for evaluation. Under some circumstances and with prior approval of the store of purchase, HRO will accept an item for return. A 15% restocking fee may be applied and all freight charges may be assessed.

Refunds will be applied back to your original payment method except for cash, which will be refunded by check. HRO will pay from its corporate offices via corporate check. Refunds via Corporate Check may take 14-21 calendar days but often are sooner.

Defective merchandise may be returned within 10 days of the original purchase for exchange. Original receipt must accompany the return. Contact your salesman for details. Software is sold on a non-returnable basis. Any software problems will be resolved under the terms of the manufacturer's warranty. Cut lengths of wire and or cable are also non-returnable.

MANUFACTURER'S NEW EQUIPMENT WARRANTY

Ham Radio Outlet supports all manufacturer's warranties. HRO will assist you with Invoice copies and shipping instructions as well as warranty service center directions for items that may fail during the manufacturer's warranty period.

Ham Radio Outlet may, in some cases, provide an in-store repair on items; please contact the store of purchase for that information. It will be necessary to provide us with the invoice number and purchase date, as most manufacturers need this information to process under their FREE warranty repair terms.

NEW EQUIPMENT WARRANTY RETURNS

When returning equipment for repair, please pack the item in original packing material or something similar to provide adequate protection during the shipping process. Note on box: "ATTENTION SERVICE." Include a copy of your purchase invoice, and a complete and detailed description of the problems. Without the invoice or a complete description, delays will be experienced in providing the proper service and returning the item to you. Be sure to insure the package for its replacement cost.

HRO will have repaired or replace the defective item at our option. If the item is found to be defective under the terms of the manufacturer's warranty, no charge will be made for service or return shipping within continental USA.

It is the customer's responsibility to ship all defective items to the service center for warranty repair.

HRO EXTENDED WARRANTY

HRO now offers an optional Extended Warranty Program for most amateur radios, which must be purchased within 30 days of the purchase of the related product. The Extended Warranty Program starts at the conclusion of the new product original warranty period, and must be processed by HRO directly via any of our stores.

The Extended Warranty Program can be purchased for one (1) or two (2) additional years, does not apply to accessory items, and is available to the original purchaser only and is not transferable. Qualifying items must be sent to HRO after the manufacturers 1 year warranty where HRO will have the item serviced or replaced.

SUPPORT

HRO prides itself in its ability to service the customer. If you are not happy, we are not finished.

If there is a problem please contact the manager of the store from which you purchased the merchandise. If your problem cannot be remedied by that store manager, please feel free to call Ham Radio Outlet National Sales at (800) 444-4799 and explain the situation. At this point our National Sales Manager will see that your problem is addressed.

LOCATIONS

Stores Are Open 10:30 AM - 5:30PM
Phones Are Open 9:30 AM - 5:30PM

Monday - Saturday

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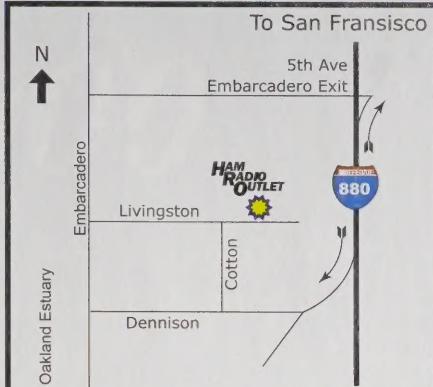


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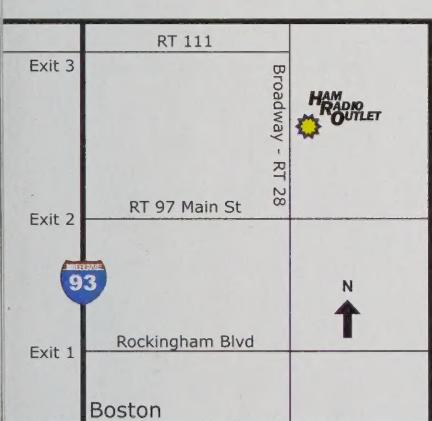
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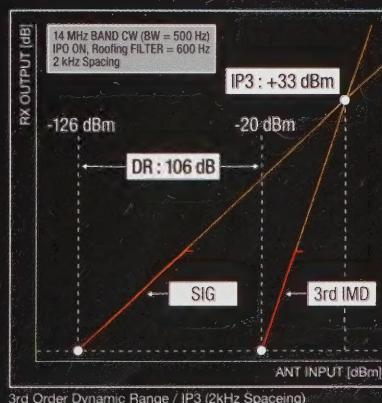
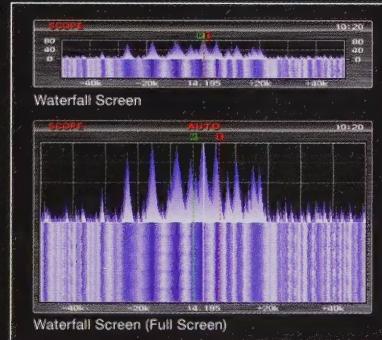
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